

=> FILE REG  
FILE 'REGISTRY' ENTERED ON 03 JUL 2008  
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=> D HIS

FILE 'HCAPLUS'

L1           362 S KNIFTON ?/AU  
L2           18861 S JAMES ?/AU  
L3           191 S SLAUGH ?/AU  
L4           150 S WEIDER ?/AU  
L5           33199 S ALLEN ?/AU  
L6           14805 S POWELL ?/AU  
L7           1 S L1 AND L2 AND L3 AND L4 AND L5 AND L6  
L8           160 S PROPANEDIOL? AND COBALT# AND IRON#  
L9           2 S (L1-L6) AND L8  
              SEL L9 2 RN

FILE 'REGISTRY'

L10          24 S E1-E24  
L11          2 S L10 AND CO/ELS  
              SEL L11 1 RN  
L12          1 S E25  
              SAV L12 COR598/A  
L13          4 S L10 AND FE/ELS  
              SEL L13 1,2,4 RN  
L14          3 S E26-E28  
              SAV L14 COR598A/A

FILE 'LREGISTRY'

E QUINOLINE/CN

FILE 'REGISTRY'

L15          2 S L10 AND P/ELS

FILE 'HCA'

L16          4392 S L12  
L17          6412 S L14  
L18          365 S L16 AND L17

FILE 'REGISTRY'

              SEL L13 1 RN  
L19          1 S E1

FILE 'HCA'  
L20        10 S L19  
L21        1 S L20 AND L16

FILE 'HCAPLUS'  
            SEL L7 1 RN

FILE 'REGISTRY'  
L22        19 S E2-E20  
L23        1 S L22 AND CO/ELS  
            E OCTAETHYLPORPHYRIN IRON CHLORIDE/CN  
L24        1 S E9

FILE 'HCA'  
L25        210 S L24  
L26        0 S L25 AND L16

FILE 'REGISTRY'  
L27        5 S L22 AND RU/ELS  
L28        54797 S (C (L) H (L) P (L) FE)/ELS  
            E CCS/CI  
L29        37486 S L28 AND COORDINATION COMPOUND/CI  
L30        20381 S L29 AND 1/M

FILE 'HCA'  
L31        7757 S L30  
L32        63 S L16 AND L31

FILE 'REGISTRY'  
L33        1 S 504-63-2

FILE 'HCA'  
L34        881 S L33/P  
L35        0 S L32 AND L34  
L36        16772 S L28  
L37        175 S L16 AND L36  
L38        0 S L37 AND L34  
L39        604 S L23  
L40        0 S L39 AND L31  
L41        0 S L39 AND L36

FILE 'REGISTRY'  
L42        144946 S (C (L) CO)/ELS AND CCS/CI

FILE 'HCA'  
L43        88664 S L42

L44            601 S L43 AND L31  
L45            0 S L44 AND L34  
L46            1367 S L43 AND L36  
L47            0 S L46 AND L34

FILE 'REGISTRY'  
L48        108027 S (C (L) N (L) FE)/ELS AND CCS/CI

FILE 'HCA'  
L49        88389 S L48  
L50        1 S L18 AND L34  
L51        110 S L16 AND L49  
L52        1 S L51 AND L34  
L53        9274 S L43 AND L49  
L54        1 S L53 AND L34

FILE 'REGISTRY'  
L55        148430 S CO/ELS AND CCS/CI  
L56        192396 S FE/ELS AND CCS/CI

FILE 'HCA'  
L57        95118 S L55

FILE 'REGISTRY'  
L58        189225 S L56 NOT L55

FILE 'HCA'  
L59        133975 S L58  
L60        14476 S L57 AND L59  
L61        2 S L60 AND L34

FILE 'REGISTRY'  
      E CO/ELS  
L62        237050 S (CO (L) C)/ELS  
L63        494674 S (FE (L) C)/ELS

FILE 'HCA'  
L64        172855 S L62  
L65        14401 S L64 AND L59  
L66        2 S L65 AND L34  
L67        11137 S L29  
L68        139 S L16 AND L67  
L69        QUE CAT# OR CATALY?  
L70        43 S L68 AND L69  
L71        46911 S (FE OR IRON#) (2A) COBALT#  
L72        5 S L70 AND L71  
L73        7408 S HYDROFORMYL?

L74                   9 S L68 AND L73  
L75                   9 S L70 AND L73

FILE 'LREGISTRY'  
L76                   STR

FILE 'REGISTRY'  
L77                   50 S L76  
L78                   63414 S L76 FUL  
                       SAV L78 COR598B/A  
L79                   63079 S L78 NOT CO/ELS  
L80                   10880 S L79 AND P/ELS  
L81                   52199 S L79 NOT L80

FILE 'HCA'  
L82                   3176 S L80  
L83                   43530 S L81  
L84                   20 S L16 AND L82  
L85                   0 S L84 AND L34  
L86                   0 S L84 AND L69  
L87                   0 S L84 AND L73  
L88                   468 S L82 AND (L64 OR L57)

FILE 'LREGISTRY'  
L89                   STR L76

FILE 'REGISTRY'  
L90                   50 S L89 SSS SAM SUB=L78  
L91                   7998 S L89 SSS FUL SUB=L78  
                       SAV L91 COR598C/A  
L92                   55176 S L79 NOT L91

FILE 'HCA'  
L93                   1808 S L91  
L94                   44144 S L92  
L95                   227 S L93 AND (L64 OR L57)  
L96                   0 S L95 AND L34  
L97                   3 S L95 AND L73  
L98                   28 S L95 AND L69  
L99                   10 S L98 AND L71  
L100                  22 S L94 AND L16  
L101                  1 S L100 AND L34  
L102                  2 S L100 AND L73  
L103                  6 S L100 AND L69  
L104                  2 S L103 AND L71  
L105                  6292 S L94 AND (L64 OR L57)  
L106                  1 S L105 AND L34

L107 4 S L105 AND L73  
L108 1419 S L105 AND L69  
L109 336 S L108 AND L71  
L110 25 S L21 OR L50 OR L52 OR L54 OR L61 OR L66 OR L72 OR L97 OR  
L111 19 S 1840-2001/PY, PRY, AY AND L110

## FILE 'REGISTRY'

=> D L78 QUE STAT  
L76 STR



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VAR G1=P/N  
NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED
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GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 3

STEREO ATTRIBUTES: NONE  
L78 63414 SEA FILE=REGISTRY SSS FUL L76

100.0% PROCESSED 255174 ITERATIONS 63414 ANSWERS  
SEARCH TIME: 00.00.01

=> FILE HCA  
FILE 'HCA' ENTERED ON 03 JUL 2008  
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=> P\_L111 1-19 BTB ABS HITSTR HITIND

L111 ANSWER 1 OF 19 HCA COPYRIGHT 2008 ACS on STN  
AN 138:5839 HCA Full-text

TI One-step production of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions

IN Allen, Kevin Dale; James, Talmadge Gail; Knifion, John Frederick; Powell, Joseph Broun; Slaugh, Lynn Henry; Weider, Paul Richard

PA Shell Internationale Research Maatschappij BV, Neth.

SO PCT Int. Appl., 36 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2002094437	A1	20021128	WO 2002-EP5476	200205 16
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	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 20030027717	A1	20030206	US 2002-146675	200205 15
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	US 6750373	B2	20040615		
	TW 592819	B	20040621	TW 2002-91110123	200205 15
				<--	
	CA 2447134	A1	20021128	CA 2002-2447134	200205 16
				<--	
	AU 2002338961	A1	20021203	AU 2002-338961	200205 16
				<--	
	EP 1409132	A1	20040421	EP 2002-743051	200205

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
 BR 2002009847 A 20040615 BR 2002-9847

200205  
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CN 1538877 A 20041020 CN 2002-811696

200205  
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JP 2005508242 T 20050331 JP 2002-591147

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16

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RU 2297880 C2 20070427 RU 2003-136427

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IN 2003DN01943 A 20051216 IN 2003-DN1943

200311  
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MX 2003PA10574 A 20040302 MX 2003-PA10574

200311  
18

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US 20040176648 A1 20040909 US 2004-790598

200403  
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PRAI US 2001-291827P P 20010518 <--  
 US 2002-146675 A3 20020515  
 WO 2002-EP5476 W 20020516

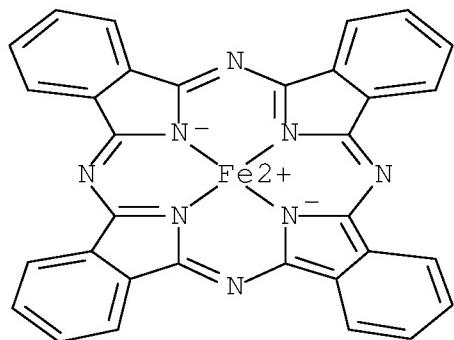
AB The present invention discloses a **catalyst** compn. comprising: (a) a cobalt component; and (b) an iron component, optionally ligated with a ligand selected from the group consisting of N-heterocycle, phosphine, and porphyrin moieties; and a process for prep. 1,3-propanediol from ethylene oxide and syngas using such a **catalyst** compn.

IT 132-16-1, Iron(II) phthalocyanine 10210-68-1,  
 Dicobalt octacarbonyl 13463-40-6, Iron pentacarbonyl  
 41697-90-9  
 (**catalyst** precursor; one-step prodn. of 1,  
 3-propanediol from ethylene oxide and syngas with an optionally ligated **cobalt-iron catalyst** under

mild conditions)

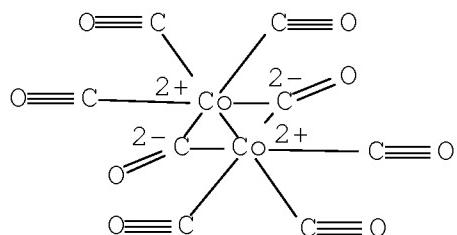
RN 132-16-1 HCA

CN Iron, [29H,31H-phthalocyaninato(2-) - $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32]-, (SP-4-1)- (CA INDEX NAME)



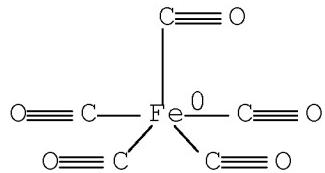
RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



RN 13463-40-6 HCA

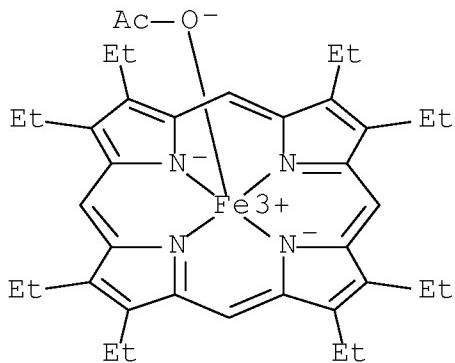
CN Iron carbonyl (Fe(CO)5), (TB-5-11)- (CA INDEX NAME)



RN 41697-90-9 HCA

CN Iron, (acetato-O)[2,3,7,8,12,13,17,18-octaethyl-21H,23H-porphinato(2-

) - $\kappa$ N21,  $\kappa$ N22,  $\kappa$ N23,  $\kappa$ N24]-, (SP-5-12)- (9CI)  
(CA INDEX NAME)



IT 504-63-2P, 1,3-Propanediol  
(one-step prodn. of 1, 3-propanediol from ethylene oxide and  
syngas with an optionally ligated cobalt-iron  
catalyst under mild conditions)

RN 504-63-2 HCA

CN 1,3-Propanediol (CA INDEX NAME)

HO—CH<sub>2</sub>—CH<sub>2</sub>—CH<sub>2</sub>—OH

IC ICM B01J031-16  
ICS B01J031-20; B01J031-28; C07C029-16  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 35, 67  
ST cobalt iron catalyst propanediol prodn  
ethylene oxide hydroformylation syngas  
IT Heterocyclic compounds  
(nitrogen, catalyst ligands; one-step prodn. of 1,  
3-propanediol from ethylene oxide and syngas with an optionally  
ligated cobalt-iron catalyst under  
mild conditions)  
IT Hydroformylation catalysts  
Synthesis gas  
(one-step prodn. of 1, 3-propanediol from ethylene oxide and  
syngas with an optionally ligated cobalt-iron  
catalyst under mild conditions)  
IT Ligands

- (one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 366-18-7, 2,2'-Dipyridyl 3682-35-7, 2,4,6-Tripyridyl-s-triazine  
6411-21-8, 1,2-Bis(diethylphosphino)ethane 70826-08-3  
143970-62-1 170284-98-7  
(catalyst ligand; one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 132-16-1, Iron(II) phthalocyanine 10210-68-1,  
Dicobalt octacarbonyl 13463-40-6, Iron pentacarbonyl  
41697-90-9  
(catalyst precursor; one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 112-18-5, N,N-Dimethyldodecylamine  
(catalyst promoter; one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 75-07-0P, Acetaldehyde, preparation 107-02-8P, Acrolein,  
preparation 2134-29-4P, 3-Hydroxypropanal  
(one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 7439-89-6, Iron, uses 7440-48-4, Cobalt, uses 15243-33-1,  
Triruthenium dodecacarbonyl  
(one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 504-63-2P, 1,3-Propanediol  
(one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 75-21-8, Ethylene oxide, reactions 630-08-0, Carbon monoxide,  
reactions 1333-74-0, Hydrogen, reactions  
(one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 108-88-3, Toluene, uses  
(solvent, mixt. with chlorobenzene; one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)
- IT 108-90-7, Chlorobenzene, uses

(solvent, mixt. with toluene; one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)

IT 646-06-0, 1,3-Dioxolane

(solvent; one-step prodn. of 1, 3-propanediol from ethylene oxide and syngas with an optionally ligated cobalt-iron catalyst under mild conditions)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L111 ANSWER 2 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 136:217172 HCA Full-text

TI Process for the production of styrene compound, and styrene compound free from biphenyl

IN Ishikawa, Shin-ichi; Eguchi, Hisao

PA Tosoh Corporation, Japan

SO U.S. Pat. Appl. Publ., 10 pp., Cont.-in-part of U.S. Ser. No. 238,585.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI US 20020026084 A1 20020228 US 2001-923347

200108  
08

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US 6472567 B2 20021029

US 6479709 B1 20021112 US 1999-238585

199901  
28

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PRAI JP 1998-18681 A 19980130 <--

JP 1998-165389 A 19980612 <--

JP 1998-209488 A 19980724 <--

JP 1998-209489 A 19980724 <--

US 1999-238585 A2 19990128 <--

OS MARPAT 136:217172

AB A process for the prodn. of a styrene compd. is provided. The process comprises reacting a Grignard reagent prep'd. from a tertiary butoxyphenyl halide with a vinyl halide in the presence of a catalyst, wherein the catalyst is at least one member selected from the group consisting of manganese catalyst, iron catalyst, cobalt catalyst and rhodium catalyst. The process overcomes the problems

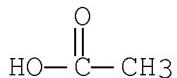
involved in the prior art, and is economical and safe. The styrene compd. by the process is free from biphenyl. Thus, 10 mL THF, 1.34 g metallic magnesium, 11.46 g p-tert-butoxybromobenzene in 20 mL THF were refluxed to give a Grignard reagent, and 0.05 g manganese(II) chloride tetrahydrate and 3.44 g vinyl chloride were added to give a p-tert-butoxystyrene.

IT 6147-53-1, Cobalt(II) acetate tetrahydrate  
18078-25-6 106245-43-6

(catalyst; process for prodn. of styrene compd., and styrene compd. free from biphenyl)

RN 6147-53-1 HCA

CN Acetic acid, cobalt(2+) salt, tetrahydrate (8CI, 9CI) (CA INDEX NAME)

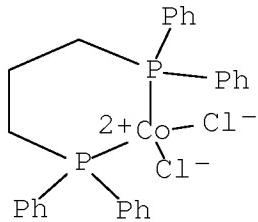


●1/2 Co(II)

●2 H<sub>2</sub>O

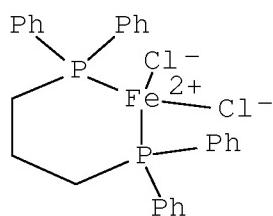
RN 18078-25-6 HCA

CN Cobalt, dichloro[1,3-propanediylbis[diphenylphosphine-κP]]-, (T-4)- (9CI) (CA INDEX NAME)



RN 106245-43-6 HCA

CN Iron, dichloro[1,3-propanediylbis[diphenylphosphine-κP]]-, (T-4)- (9CI) (CA INDEX NAME)



IC ICM C07C043-263

INCL 568630000

CC 35-2 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 25

ST styrene deriv prepn safe grignard reaction catalyst

IT Grignard reaction catalysts

(process for prodn. of styrene compd., and styrene compd. free from biphenyl)

IT 6147-53-1, Cobalt(II) acetate tetrahydrate 6156-78-1,

Manganese(II) acetate tetrahydrate 7646-79-9, Cobalt(II) chloride, uses 7705-08-0, Iron(III) chloride, uses 13446-03-2,

Manganese(II) bromide 13446-34-9, Manganese(II) chloride tetrahydrate 13478-10-9, Iron(II) chloride tetrahydrate

13569-65-8, Rhodium(III) chloride trihydrate 18078-25-6

19543-98-7, Dichlorobis(triphenylphosphine)iron 20049-61-0

32425-36-8, (2,2'-Bipyridine)dichloroiron 106245-43-6

236387-29-4

(catalyst; process for prodn. of styrene compd., and styrene compd. free from biphenyl)

L111 ANSWER 3 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 131:338886 HCA Full-text

TI Metal-fluorinated and metal-perfluorinated complexes as catalysts and extractants for multiphase systems

IN Horvath, Istvan Tamas; Rabai, Jozsef

PA Exxon Research and Engineering Co., USA

SO U.S., 8 pp., Cont.-in-part of U.S. Ser. No. 502,339, abandoned.  
CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI US 5981422 A 19991109 US 1997-918828

199708

26

US 5463082

A

19951031

US 1993-88706

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199307  
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PRAI US 1993-88706

A3 19930708 <--

US 1995-502339

B2 19950714 <--

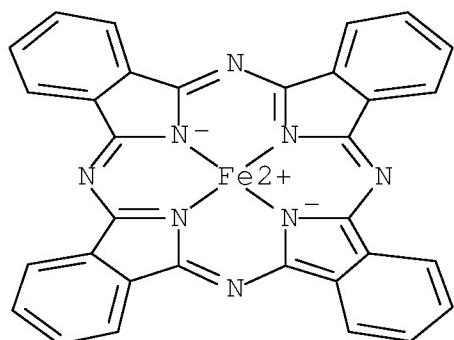
OS MARPAT 131:338886

AB Stoichiometric and **catalytic** chem. operations are carried out in soln. using fluorine-contg. multiphase systems contg. compds. selected from: (1) a (perfluoroalkyl)phthalocyanine metal complex, in which the metal is chosen from Ru, Fe, Co, Os, Rh, and Ir, and (2) metal complexes of (perfluoroalkyl)-5,10,15,20-tetrakis(pentafluorophenyl)porphyrin and metal complexes selected from ClM[P[(CH<sub>2</sub>)<sub>n</sub>(CF<sub>2</sub>)CF<sub>3</sub>]<sub>3</sub>]<sub>3</sub>, ClM[P[O(CH<sub>2</sub>)<sub>n</sub>(CF<sub>2</sub>)mCF<sub>3</sub>]<sub>3</sub>]<sub>3</sub>, HM(CO)<sub>x</sub>[P[(CH<sub>2</sub>)<sub>n</sub>(CF<sub>2</sub>)mCF<sub>3</sub>]<sub>3</sub>]<sub>4-x</sub>, and HM(CO)<sub>x</sub>[P[O(CH<sub>2</sub>)<sub>n</sub>(CF<sub>2</sub>)mCF<sub>3</sub>]<sub>3</sub>]<sub>4-x</sub>, in which M = Co, Rh, Fe, Os, and Ir; x = 1-3; (CH<sub>2</sub>)<sub>n</sub> may be present or absent (when present, n = 1-5); and m = 4-20. The complexes are suitable for use as oxidn. **catalysts** and hydroformylation **catalysts**, and as extractants for extn. of metals from nonfluorinated solvents.

IT 132-16-1DP, Iron(II) phthalocyanine, perfluoroalkylated  
3317-67-7DP, Cobalt(II) phthalocyanine, perfluoroalkylated  
(**catalysts**; metal-fluorinated and metal-perfluorinated  
complexes as **catalysts** and extractants for multiphase  
systems)

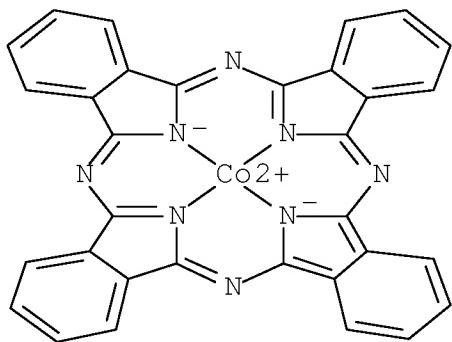
RN 132-16-1 HCA

CN Iron, [29H,31H-phthalocyaninato(2-)-κN<sub>29</sub>,κN<sub>30</sub>,κN<sub>31</sub>,κN<sub>32</sub>]-, (SP-4-1)- (CA INDEX NAME)



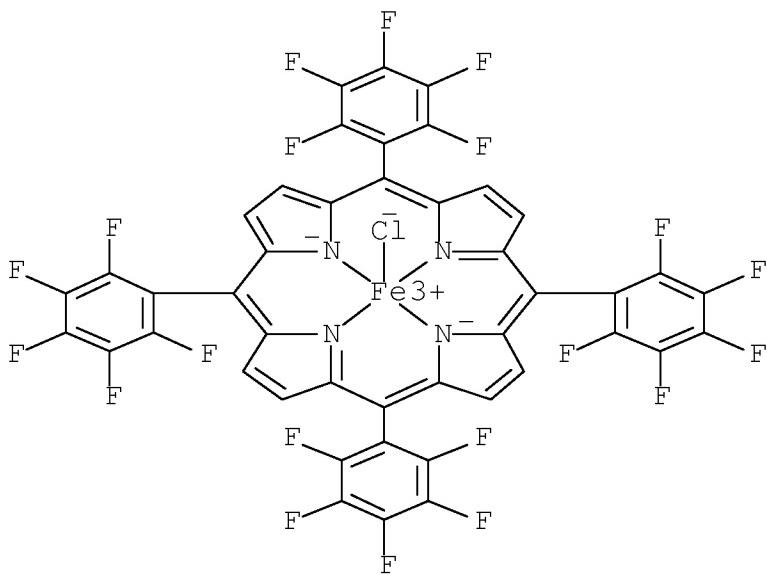
RN 3317-67-7 HCA

CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN<sub>29</sub>,κN<sub>30</sub>,κN<sub>31</sub>,κN<sub>32</sub>]-, (SP-4-1)- (CA INDEX NAME)



IT 36965-71-6D, perfluoroalkylated  
 (catalysts; prepn. of metal-fluorinated and  
 metal-perfluorinated complexes as catalysts and  
 extractants for multiphase systems)

RN 36965-71-6 HCA  
 CN Iron, chloro[5,10,15,20-tetrakis(pentafluorophenyl)-21H,23H-  
 porphinato(2-) -κN21,κN22,κN23,κN24] -,  
 (SP-5-12) - (CA INDEX NAME)

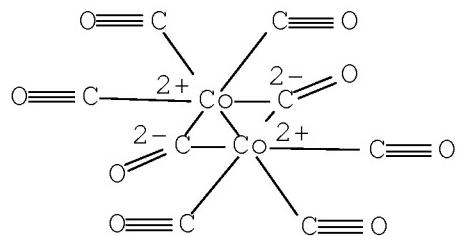


IT 10210-68-1DP, Dicobalt octacarbonyl, complexes with  
 tris(tridecafluoroctyl)phosphine  
 (hydroformylation catalysts;

metal-(fluoroalkyl)phosphine complexes as  
hydroformylation catalysts for)

RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



IC ICM B01J031-18

ICS C07B047-00

INCL 502163000

CC 48-8 (Unit Operations and Processes)

Section cross-reference(s): 28, 29, 45, 67

ST fluorinated compd **catalyst** extractant multiphase system; perfluorinated compd **catalyst** extractant multiphase system; oxidn **catalyst** multiphase fluorinated compd; hydroformylation catalyst multiphase fluorinated compd; perfluoroalkyl phthalocyanine metal oxidn **catalyst**

IT Extractants

(metal-fluorinated and metal-perfluorinated complexes as **catalysts** and extractants for multiphase systems)

IT Solvent extraction

(metal; metal-fluorinated and metal-perfluorinated complexes as **catalysts** and extractants for multiphase systems)

IT Phase transfer **catalysts**

Phase transfer **catalysts**

(oxidn.; metal-fluorinated and metal-perfluorinated complexes as **catalysts** and extractants for multiphase systems)

IT Alkylation

(perfluoroalkylation; in prepn. of metal-fluorinated and metal-perfluorinated complexes as **catalysts** and extractants for multiphase systems)

IT Oxidation **catalysts**

Oxidation **catalysts**

(phase transfer; metal-fluorinated and metal-perfluorinated complexes as **catalysts** and extractants for multiphase systems)

IT Hydroformylation **catalysts**

(phase-transfer; metal-fluorinated and metal-perfluorinated

- complexes as **catalysts** and extractants for multiphase systems)
- IT 132-16-1DP, Iron(II) phthalocyanine, perfluoroalkylated  
355-43-1P, Perfluorohexyl iodide 423-62-1DP, Perfluorodecyl  
iodide, reaction products with metal phthalocyanine complexes  
507-63-1DP, Perfluorooctyl iodide, reaction products with metal  
phthalocyanine complexes 3317-67-7DP, Cobalt(II)  
phthalocyanine, perfluoroalkylated 14055-02-8DP, Nickel(II)  
phthalocyanine, perfluoroalkylated  
(**catalysts**; metal-fluorinated and metal-perfluorinated  
complexes as **catalysts** and extractants for multiphase systems)
- IT 36965-71-6D, perfluoroalkylated  
(**catalysts**; prepn. of metal-fluorinated and  
metal-perfluorinated complexes as **catalysts** and  
extractants for multiphase systems)
- IT 822-67-3, 2-Cyclohexenol 930-68-7, 2-Cyclohexenone 6705-49-3,  
2,3-Epoxycyclohexanone  
(formation of, in cyclohexene oxidn.; metal-fluorinated and  
metal-perfluorinated complexes as **catalysts** and  
extractants for multiphase systems)
- IT 127-63-9, Diphenyl sulfone  
(formation of, in di-Ph sulfide oxidn.; metal-fluorinated and  
metal-perfluorinated complexes as **catalysts** and  
extractants for multiphase systems)
- IT 1016-05-3, Dibenzothiophene sulfone  
(formation of, in dibenzothiophene oxidn.; metal-fluorinated and  
metal-perfluorinated complexes as **catalysts** and  
extractants for multiphase systems)
- IT 7786-29-0P, Octanal, 2-methyl- 19009-56-4P, Decanal, 2-methyl-  
35127-50-5P, Isononanal  
(formation of; metal-(fluoroalkyl)phosphine complexes as  
hydroformylation **catalysts** for)
- IT 124-19-6P, Nonanal  
(formation of; metal-(fluoroalkyl)phosphine complexes as  
hydroformylation **catalysts** for)
- IT 10210-68-1DP, Dicobalt octacarbonyl, complexes with  
tris(tridecafluorooctyl)phosphine 14874-82-9DP, complexes with  
tris(tridecafluorooctyl)phosphine  
(hydroformylation **catalysts**;  
metal-(fluoroalkyl)phosphine complexes as  
hydroformylation **catalysts** for)
- IT 111-66-0, 1-Octene 872-05-9, 1-Decene  
(hydroformylation of; metal-(fluoroalkyl)phosphine  
complexes as hydroformylation **catalysts** for)
- IT 110-83-8, Cyclohexene, reactions 132-65-0, Dibenzothiophene  
139-66-2, Diphenyl sulfide

(oxidn. of; metal-fluorinated and metal-perfluorinated complexes as catalysts and extractants for multiphase systems)

IT 110-54-3P, n-Hexane, processes 355-02-2P,  
 Perfluoromethylcyclohexane 10049-07-7P, Rhodium trichloride  
 (selective extrn. of; metal-fluorinated and metal-perfluorinated complexes as catalysts and extractants for multiphase systems)

IT 103249-38-3DP, rhodium carbonyl complexes 103249-38-3P  
 114469-96-4P 149790-22-7P 165805-62-9P  
 (synthesis of; in prepn. of metal-fluorinated and metal-perfluorinated complexes as catalysts and extractants for multiphase systems)

IT 112-44-7P, n-Undecanal  
 (synthesis of; metal-(fluoroalkyl)phosphine complexes as hydroformylation catalysts for)

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L111 ANSWER 4 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 131:144959 HCA Full-text

TI Method for preparing styrene derivatives

IN Ishikawa, Shinichi; Eguchi, Hisao

PA Tosoh Corp., Japan

SO Ger. Offen., 10 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19903925	A1	19990805	DE 1999-19903925	199902 01
				<--	
JP	2000239192	A	20000905	JP 1999-21787	199901 29
				<--	
PRAI	JP 1998-18681	A	19980130	<--	
	JP 1998-165389	A	19980612	<--	
	JP 1998-209488	A	19980724	<--	
	JP 1998-209489	A	19980724	<--	
	JP 1998-357438	A	19981216	<--	
OS	MARPAT 131:144959				
AB	The use of manganese, iron, cobalt and rhodium catalysts in the manuf. of styrene derivs. by the reaction of a vinyl halide with a				

Grignard reagent prep'd. from an arom. halogen compd. produces higher yields with lower costs than conventional processes. Thus, a soln. of 11.46 g p-tert-butoxybromobenzene in 20 mL THF was added dropwise to a THF soln. of MgI, under N<sub>2</sub>. After stirring for 1 h at 40°-50°, 0.05 g MnCl<sub>2</sub>·4H<sub>2</sub>O was added to the reaction mixt. contg. the Grignard reagent. Then 3.44 g vinyl chloride was added in 10 min and the mixt. was stirred for 1 h at 20°-30°. The reaction mixt. was worked up to give an 80.2% yield of p-tert-butoxystyrene was obtained.

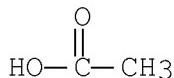
IT 6147-53-1, Cobalt acetate tetrahydrate 18078-25-6

106245-43-6

(catalyst; in manuf. of styrene derivs. from arom. halogen compd. Grignard reagent and vinyl halide)

RN 6147-53-1 HCA

CN Acetic acid, cobalt(2+) salt, tetrahydrate (8CI, 9CI) (CA INDEX NAME)

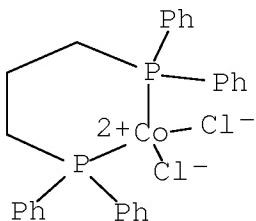


● 1/2 Co(II)

● 2 H<sub>2</sub>O

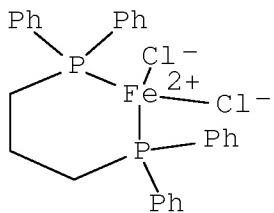
RN 18078-25-6 HCA

CN Cobalt, dichloro[1,3-propanediylbis(diphenylphosphine-κP)]-, (T-4)- (9CI) (CA INDEX NAME)



RN 106245-43-6 HCA

CN Iron, dichloro[1,3-propanediylbis(diphenylphosphine-κP)]-, (T-4)- (9CI) (CA INDEX NAME)



IC ICM C07B049-00  
 ICS C07C041-30; C07C017-269; C07C001-22; C07C043-225; C07C025-28;  
 C07C015-46  
 CC 35-2 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 25  
 ST styrene deriv manuf; iron **catalyst** manuf styrene deriv;  
 manganese **catalyst** manuf styrene deriv; cobalt  
**catalyst** manuf styrene deriv; rhodium **catalyst**  
 manuf styrene deriv; buoxystyrene manuf  
 IT 6147-53-1, Cobalt acetate tetrahydrate 6156-78-1,  
 Manganese acetate tetrahydrate 7646-79-9, Cobalt chloride ( $\text{CoCl}_2$ ),  
 uses 7705-08-0, Ferric chloride, uses 7758-94-3, Ferrous  
 chloride 13446-03-2, Manganese bromide 13446-34-9, Manganese  
 chloride tetrahydrate 13446-69-0, Rhodium trichloride tetrahydrate  
 13478-10-9, Ferrous chloride tetrahydrate 18078-25-6  
 19543-98-7, Irondichlorobis(triphenylphosphine) 20049-61-0, Iron  
 bromide ( $\text{FeBr}_2$ ) tetrahydrate 32425-36-8 106245-43-6  
 236387-29-4  
 (**catalyst**; in manuf. of styrene derivs. from arom.  
 halogen compd. Grignard reagent and vinyl halide)  
 IT 622-97-9P, p-Methylstyrene 1073-67-2P 95418-58-9P,  
 p-tert-Butoxystyrene 105612-79-1P  
 (manuf. of styrene derivs. from arom. halogen compd. Grignard  
 reagent and vinyl halide in presence of **iron**,  
**manganese**, **cobalt** and **rhodium catalysts**)  
 IT 75-01-4, reactions 106-38-7, p-Bromotoluene 106-39-8,  
 p-Bromochlorobenzene 60876-70-2, p-tert-Butoxybromobenzene  
 99376-83-7  
 (reactant; manuf. of styrene derivs. from arom. halogen compd.  
 Grignard reagent and vinyl halide in presence of **iron**,  
**manganese**, **cobalt** and **rhodium catalysts**)

L111 ANSWER 5 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 129:189670 HCA Full-text

OREF 129:38537a,38540a

TI Process for the preparation of acylaminocarboxylic acids by

carboxymethylation  
IN Stern, Michael K.; Johnson, Todd J.; Rogers, Michael D.; Levine,  
Jeffrey A.; Morgenstern, David A.; Fobian, Yvette M.  
PA Monsanto Company, USA  
SO PCT Int. Appl., 160 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9835930	A1	19980820	WO 1998-US2882	199802 12
				<--	
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	CA 2271201	A1	19980820	CA 1998-2271201	199802 12
				<--	
	AU 9863264	A	19980908	AU 1998-63264	199802 12
				<--	
	AU 740288	B2	20011101		
	CA 2509953	A1	19990812	CA 1998-2509953	199802 12
				<--	
	CA 2509953	C	20080617		
	EP 973719	A1	20000126	EP 1998-907465	199802 12
				<--	
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	NZ 335654	A	20000623	NZ 1998-335654	199802 12

BR 9806266	A	20001017	BR 1998-6266	<--
				199802 12
HU 2000002032	A2	20001028	HU 2000-2032	<--
				199802 12
HU 2000002032	A3	20011228		<--
HU 2000002391	A2	20001128	HU 2000-2391	
				199802 12
HU 2000002391	A3	20030828		<--
US 6153753	A	20001128	US 1998-22967	
				199802 12
NZ 335649	A	20010126	NZ 1998-335649	<--
				199802 12
JP 2001511810	T	20010814	JP 1998-535970	<--
				199802 12
AT 325799	T	20060615	AT 1998-906441	<--
				199802 12
EP 1716923	A1	20061102	EP 2006-6198	<--
				199802 12
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				<--
ES 2264196	T3	20061216	ES 1998-906441	
				199802 12
ZA 9801220	A	19980817	ZA 1998-1220	<--
				199802 13
TW 464537	B	20011121	TW 1998-87102054	<--
				199802

NO 9902245	A	19990812	<-- NO 1999-2245	199905 07
IN 188474	A1	20020928	<-- IN 1999-MA536	199905 07
IN 188475	A1	20020928	<-- IN 1999-MA537	199905 07
US 6265605	B1	20010724	<-- US 2000-499699	200002 07
AU 728830	B2	20010118	<-- AU 2000-17567	200002 17
US 20020002281	A1	20020103	<-- US 2001-871829	200106 01
IN 2001MA00616	A	20050304	<-- IN 2001-MA616	200107 27
IN 2001MA00617	A	20050304	<-- IN 2001-MA617	200107 27
US 20030088122	A1	20030508	<-- US 2002-151650	200205 20
AU 2003200725	A1	20030501	<-- AU 2003-200725	200302 25
AU 2003200725	B2	20050721	<--	
US 20030225298	A1	20031204	US 2003-408515	200304 07
			<--	

US 6759549 B2 20040706  
PRAI US 1997-37775P P 19970213 <--  
AU 1998-61663 A 19980212 <--  
CA 1998-2275866 A3 19980212 <--  
EP 1998-906441 A 19980212 <--  
US 1998-22967 A 19980212 <--  
WO 1998-US2882 W 19980212 <--  
AU 1999-38959 A3 19990510 <--  
US 2000-499699 A3 20000207 <--  
US 2001-871829 A3 20010601 <--  
US 2002-151650 B1 20020520

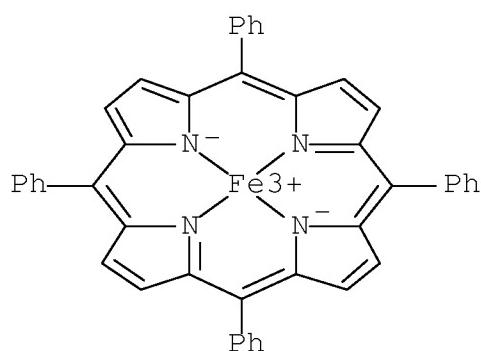
OS CASREACT 129:189670; MARPAT 129:189670

AB A process for the prepn. of N-acylamino carboxylic acids by carboxymethylation reactions is described. In these reactions, a reaction mixt. is formed which contains a base pair, carbon monoxide, hydrogen, and an aldehyde with the base pair comprising a carbamoyl compd. and a carboxymethylation catalyst precursor. In a preferred embodiment, the carbamoyl compd. and aldehyde are selected to yield an N-acylaminocarboxylic acid which is readily converted to N-(phosphonomethyl)glycine, or a salt or ester thereof. Addnl., a process for oxidative dealkylation of N-alkylglyphosate derivs. with oxygen in the presence of platinum and a catalyst modifier is described. Thus, 11.8 g of acetamide, 13.6 g of 95% paraformaldehyde, 12.9 g water, 1.8 g 37% HCl, 90 mL DME, and 4.1 g Co<sub>2</sub>(CO)<sub>8</sub> was added to a 300 mL autoclave and pressurized to 1500 psi with CO at 25°. The mixt. was heated to 110° for 30 min, and HPLC anal. gave 87% of N-acetyliminodiacetic acid along with 0.5% iminodiacetic acid and 4.0% N-acetylglycine. Many other reactions using different carbonyl compds., different cobalt catalysts, and different reaction conditions are given.

IT 170645-84-8 211934-69-9  
(prepn. of aminocarboxylic acids by carboxymethylation)

RN 170645-84-8 HCA

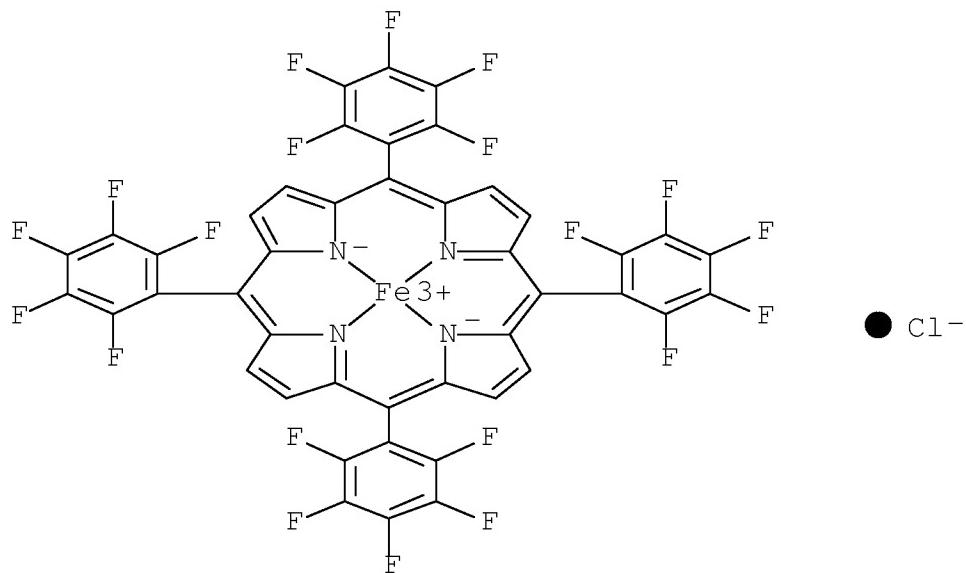
CN Iron(1+), [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, chloride, (SP-4-1)-  
(9CI) (CA INDEX NAME)



● Cl-

RN 211934-69-9 HCA

CN Iron(1+), [5,10,15,20-tetrakis(pentafluorophenyl)-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-,  
chloride (1:1), (SP-4-1)- (CA INDEX NAME)

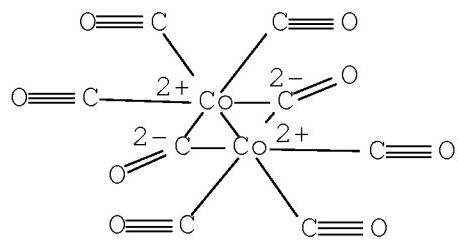


IT 10210-68-1P, Dicobalt octacarbonyl

(prepn. of aminocarboxylic acids by carboxymethylation)

RN 10210-68-1 HCA

CN Cobalt, di-μ-carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



IC ICM C07C062-00  
 ICS C07C061-09; C07C061-10; C07C061-24; C07C233-00; C07C235-00;  
 C07C237-00; C07D241-18; C07D251-14; C07F009-22; C07F009-28  
 CC 34-2 (Amino Acids, Peptides, and Proteins)  
 Section cross-reference(s): 5, 24  
 ST acylaminocarboxylic acid prepn carboxymethylation process; carbamoyl  
 compd aldehyde carboxymethylation process; glyphosate prepn process;  
 oxidative dealkylation process platinum **catalyst**  
 IT Methylat<sup>n</sup>ion **catalysts**  
     (carboxymethylation **catalysts**; prepn. of  
     aminocarboxylic acids by carboxymethylation in presence of cobalt  
     **catalysts**)  
 IT Carboxymethylation  
     (**catalysts**; prepn. of aminocarboxylic acids by  
     carboxymethylation in presence of cobalt **catalysts**)  
 IT Dealkylation  
     Dealkylation **catalysts**  
     (oxidative; oxidative dealkylation of alkylglyphosate derivs.  
     with platinum and **catalyst** modifiers)  
 IT 102-54-5, Ferrocene 345-92-6, 4,4'-Difluorobenzophenone  
 519-73-3, Triphenylmethane 524-38-9, N-Hydroxyphthalimide  
 2564-83-2, TEMPO 4316-58-9, Tris(4-bromophenyl)amine 7061-81-6  
 7440-06-4, Platinum, uses 14172-92-0 14323-06-9,  
 Rutheniumtris(2,2'-bipyridine) dichloride 22541-53-3, uses  
 170645-84-8 211934-69-9  
     (prepn. of aminocarboxylic acids by carboxymethylation)  
 IT 10210-68-1P, Dicobalt octacarbonyl  
     (prepn. of aminocarboxylic acids by carboxymethylation)  
 RE.CNT 3        THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
                   ALL CITATIONS AVAILABLE IN THE RE FORMAT

L111 ANSWER 6 OF 19 HCA COPYRIGHT 2008 ACS on STN  
 AN 123:87349 HCA Full-text  
 OREF 123:15549a,15552a  
 TI Fluorous multiphase catalyst or reagent systems for environmentally  
 friendly oxidation or hydroformylation or extraction

processes  
 IN Horvath, Istvan Tamas; Rabai, Jozsef  
 PA Exxon Research and Engineering Co., USA  
 SO Eur. Pat. Appl., 11 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 633062	A1	19950111	EP 1994-304877	199407 04
				<--	
	EP 633062	B1	19990908		
	R: DE, FR, GB, IT, NL				
	US 5463082	A	19951031	US 1993-88706	199307 08
				<--	
	CA 2126778	A1	19950109	CA 1994-2126778	199406 27
				<--	
	AU 9467313	A	19950119	AU 1994-67313	199407 06
				<--	
	AU 673743	B2	19961121		
	NO 9402563	A	19950109	NO 1994-2563	199407 07
				<--	
	NO 308343	B1	20000904		
PRAI	US 1993-88706	A	19930708	<--	
AB	Stoichiometric and catalytic chem. transformations may be carried out in soln. using novel fluorous multiphase systems (FMS). Fluorous denotes a C-F bond-rich org. mol. derived by replacing H bonded to C with F. The FMS consists of a fluorous phase contg. a fluorous solvent, typically a fluorocarbon or a fluorohydrocarbon (with or without substituent groups), and a reagent or a catalyst contg. a sufficient no. of fluorous moieties to render it preferentially sol. in the fluorous solvent and located at the interface of the fluorous and nonfluorous phases. The nonfluorous solvent may be any known org. or nonorg. solvent with limited or no solv. in the fluorous solvent and is effective for dissolving the reaction products (e.g.,				

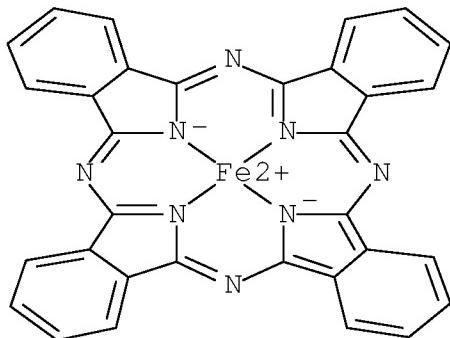
a nonfluorous solvent having a Hildebrand solv. parameter of at least about 18.0 MPa<sup>1/2</sup>). The reaction can occur simultaneously in the fluorous phase and at the interface of the phases. The fluorous multiphase systems facilitate the sepn. of the FMS catalyst or spent FMS reagent, providing catalysts and reagents with high product selectivity, resulting in esp. environmentally friendly processes.

IT 132-16-1 3317-67-7, Phthalocyaninato cobalt (II)  
16456-81-8

(fluorous multiphase catalyst or reagent systems for oxidn. or hydroformylation or extn.)

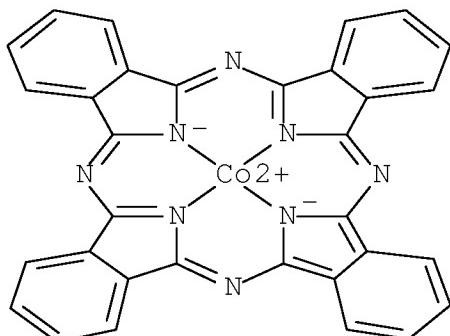
RN 132-16-1 HCA

CN Iron, [29H,31H-phthalocyaninato(2-)-κN<sub>29</sub>,κN<sub>30</sub>,κN<sub>31</sub>,κN<sub>32</sub>]-, (SP-4-1)- (CA INDEX NAME)



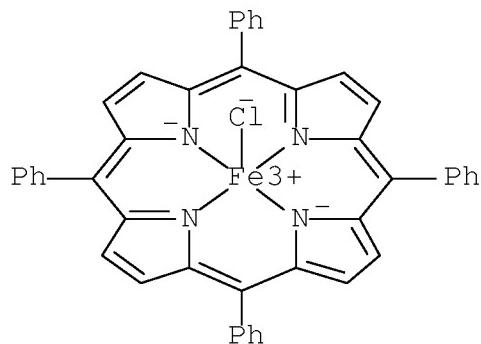
RN 3317-67-7 HCA

CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN<sub>29</sub>,κN<sub>30</sub>,κN<sub>31</sub>,κN<sub>32</sub>]-, (SP-4-1)- (CA INDEX NAME)



RN 16456-81-8 HCA

CN Iron, chloro[5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-  
κN21,κN22,κN23,κN24]-, (SP-5-12)- (CA INDEX  
NAME)



IC ICM B01J031-16  
ICS B01J031-02  
CC 48-8 (Unit Operations and Processes)  
Section cross-reference(s): 60, 67  
ST fluorous multiphase catalyst system; oxidn fluorous multiphase catalyst system; hydroformylation fluorous multiphase catalyst; extn fluorous multiphase catalyst system  
IT Extraction  
(fluorous multiphase catalyst or reagent systems for oxidn. or hydroformylation or extn.)  
IT Hydroformylation catalysts  
Oxidation catalysts  
(fluorous multiphase catalyst or reagent systems for oxidn. or hydroformylation or extn.)  
IT Perfluorocarbons  
(solvents; fluorous multiphase catalyst or reagent systems for oxidn. or hydroformylation or extn.)  
IT Hydrocarbons, uses  
(fluoro, solvents; fluorous multiphase catalyst or reagent systems for oxidn. or hydroformylation or extn.)  
IT 122-16-1 3317-67-7, Phthalocyaninato cobalt (II)  
14055-02-8, Phthalocyaninato nickel(II) 16456-81-8  
103249-38-3 114469-96-4 149790-22-7 165805-62-9  
(fluorous multiphase catalyst or reagent systems for oxidn. or hydroformylation or extn.)  
IT 110-83-8, Cyclohexene, reactions 132-65-0, Dibenzothiophene  
139-66-2, Diphenyl sulfide 872-05-9, 1-Decene  
(fluorous multiphase catalyst or reagent systems for oxidn. or hydroformylation or extn.)

IT 110-54-3, n-Hexane, processes 7440-16-6, Rhodium, processes  
(fluorous multiphase catalyst or reagent systems for oxidn. or  
hydroformylation or extn.)

L111 ANSWER 7 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 119:84650 HCA Full-text

OREF 119:14967a,14970a

TI Oxidation of iron-subgroup metal carbonyls by organic hydroperoxides  
AU Spirina, I. V.; Sergeev, S. A.; Shashkova, T. V.; Cherkasov, V. K.;  
Maslennikov, V. P.

CS NII Khim., Nizhniy Novgorod, Russia

SO Zhurnal Obshchei Khimii (1992), 62(12), 2656-62

CODEN: ZOKHA4; ISSN: 0044-460X

DT Journal

LA Russian

OS CASREACT 119:84650

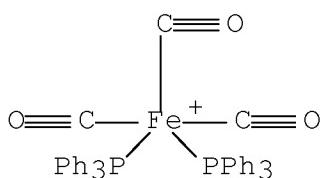
AB During oxidn. of Fe, Co, and Ni carbonyls by ROOH in hydrocarbons,  
CO, CO<sub>2</sub>, metal oxides, carbonates, and reaction products of the  
peroxy fragments are formed. The 1st stages of reaction are the  
transfer of an electron from Mn(CO)<sub>m</sub> (M = Fe, Co, Ni) to the peroxide  
and the appearance of metal carbonyl cation radicals. The process is  
accompanied by the catalytic decompr. of ROOH and by the oxidn. the  
hydrocarbon used as solvent.

IT 60243-26-7P 86469-05-8P

(formation of, by oxidn. of iron carbonyl phosphine complex by  
hydroperoxide)

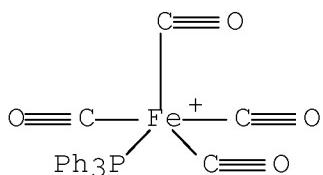
RN 60243-26-7 HCA

CN Iron(1+), tricarbonylbis(triphenylphosphine)-, (TB-5-11)- (CA INDEX  
NAME)

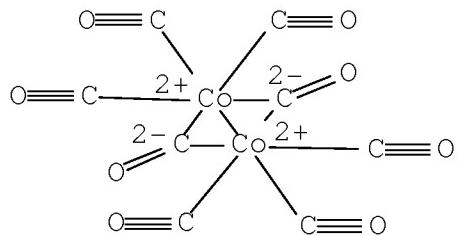


RN 86469-05-8 HCA

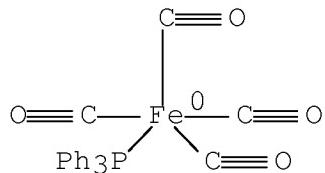
CN Iron(1+), tetracarbonyl(triphenylphosphine)- (CA INDEX NAME)



IT 10210-68-1, Dicobalt octacarbonyl 35679-07-3,  
 Tetracarbonyl(triphenylphosphine)iron  
 (oxidn. of, by hydroperoxides)  
 RN 10210-68-1 HCA  
 CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



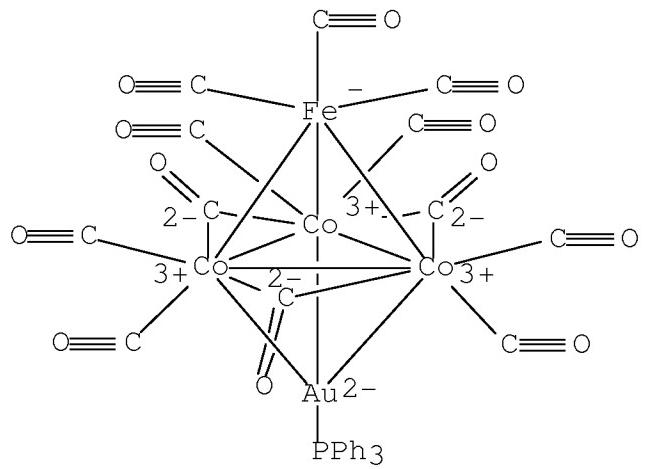
RN 35679-07-3 HCA  
 CN Iron, tetracarbonyl(triphenylphosphine)-, (TB-5-12)- (CA INDEX NAME)



CC 78-9 (Inorganic Chemicals and Reactions)  
 Section cross-reference(s): 22, 67  
 IT 60243-26-7P 86469-05-8P  
 (formation of, by oxidn. of iron carbonyl phosphine complex by  
 hydroperoxide)  
 IT 75-91-2, tert-Butyl hydroperoxide 80-15-9, 1-Methyl-1-phenylethyl  
 hydroperoxide  
 (oxidn. by, of cobalt and iron and nickel  
 carbonyls)  
 IT 10210-68-1, Dicobalt octacarbonyl 13463-39-3, Nickel  
 tetracarbonyl 13463-40-6, Iron pentacarbonyl 15321-51-4, Diiron  
 nonacarbonyl 17685-52-8, Triiron dodecacarbonyl 17786-31-1,  
 Tetracobalt dodecacarbonyl 35679-07-3,  
 Tetracarbonyl(triphenylphosphine)iron

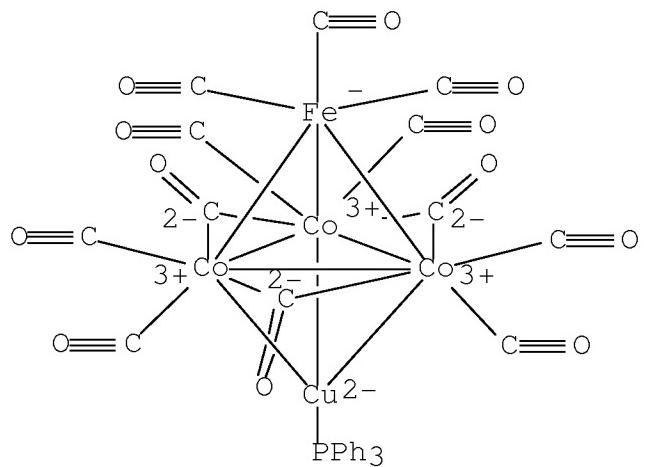
(oxidn. of, by hydroperoxides)

L111 ANSWER 8 OF 19 HCA COPYRIGHT 2008 ACS on STN  
AN 118:191996 HCA Full-text  
OREF 118:32993a,32996a  
TI Preparation and **catalytic** properties of polymer-supported  
iron-cobalt-copper and iron-  
cobalt-gold pentametallic clusters  
AU Jia, Chengguo; Wang, Yunpu; Feng, Hanyu  
CS Dep. Chem., Northwest. Norm. Univ., Lanzhou, 730070, Peop. Rep.  
China  
SO Reactive Polymers (1992), 18(3), 203-11  
CODEN: REPLEN; ISSN: 0923-1137  
DT Journal  
LA English  
OS CASREACT 118:191996  
AB Two polymer-supported metal clusters: (POL-C<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>-PPh<sub>2</sub>M-  
 $\mu$ 3)FeCo<sub>3</sub>(CO)<sub>12</sub> [B, M = Cu and D, M = Au, POL = poly(styrene-  
divinylbenzene)] were synthesized and their structures were studied  
spectroscopically. B and D were more stable and more selective as  
**catalysts** for the prodn. of n-heptyl aldehyde in the hydroformylation  
of 1-hexene than the corresponding homogeneous cluster: A, (Ph<sub>3</sub>PCu-  
 $\mu$ 3)FeCo<sub>2</sub>(CO)<sub>12</sub> and C, (Ph<sub>3</sub>PAu- $\mu$ 3)FeCo<sub>3</sub>(CO)<sub>12</sub>. The polymer support  
enhanced stability and **catalytic** selectivity of the clusters. C and  
D, which contained gold atoms, were more active in the  
hydroformylation reaction and less thermostable than A and B which  
contained copper atoms. The polymer-supported clusters could be  
reused in the **catalytic** reaction without serious degrdn.  
IT 79829-47-3 90636-10-5 146912-29-0D,  
polymer-supported 146912-30-3D, polymer-supported  
(prepn. as **catalyst** for hydroformylation of hexene)  
RN 79829-47-3 HCA  
CN Iron, tricarbonyl(tri- $\mu$ -carbonylhexacarbonyltricobalt) [(triphenyl  
phosphine)gold]-, (3Au-Co) (3Co-Co) (3Co-Fe) (9CI) (CA INDEX NAME)



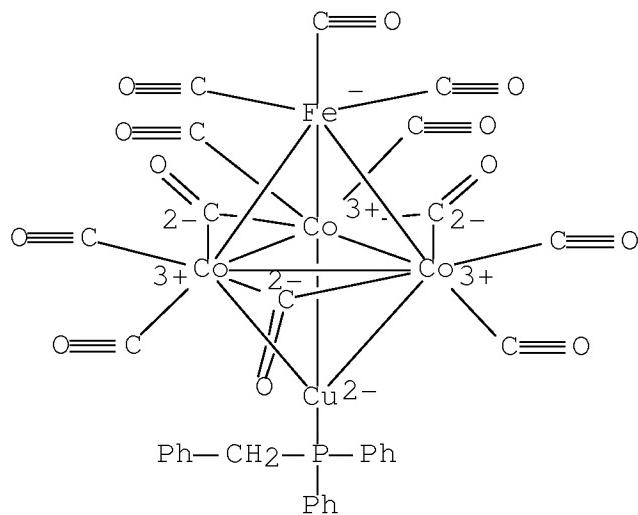
RN 90636-10-5 HCA

CN Iron, tricarbonyl(tri- $\mu$ -carbonylhexacarbonyltricobalt) [(triphenyl phosphine)copper]-, (3Co-Co) (3Co-Cu) (3Co-Fe) (9CI) (CA INDEX NAME)



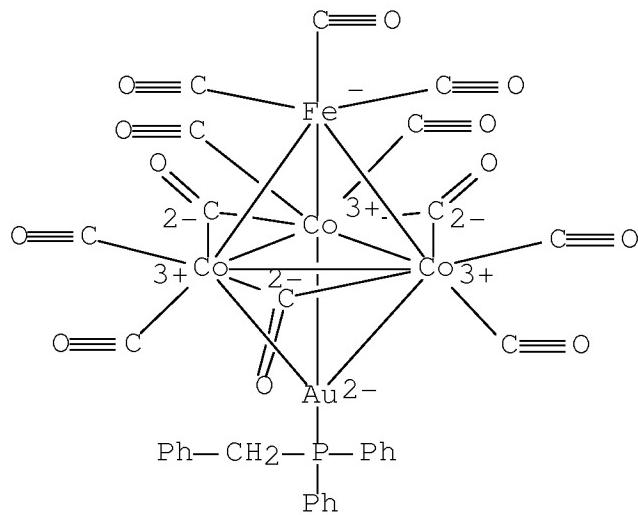
RN 146912-29-0 HCA

CN Iron, tricarbonyl[[diphenyl(phenylmethyl)phosphine]copper] (tri- $\mu$ - carbonylhexacarbonyltricobalt)-, (3Co-Co) (3Co-Cu) (3Co-Fe) (9CI) (CA INDEX NAME)



RN 146912-30-3 HCA

CN Iron, tricarbonyl[ [diphenyl(phenylmethyl)phosphine]gold] (tri- $\mu$ - carbonylhexacarbonyltricobalt)-, (3Au-Co) (3Co-Co) (3Co-Fe) (9CI) (CA INDEX NAME)

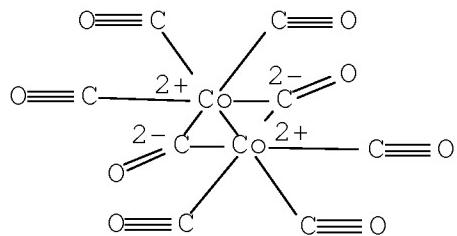


IT 10210-68-1, Dicobalt octacarbonyl

(reaction of, with iron pentacarbonyl and polymer-copper or -gold)

RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



CC 29-14 (Organometallic and Organometalloidal Compounds)  
 Section cross-reference(s): 23, 35  
 ST polymer supported metal cluster **catalyst**; iron metal  
 cluster **catalyst** polymer supported; cobalt metal cluster  
**catalyst** polymer supported; copper metal cluster  
**catalyst** polymer supported; gold metal cluster  
**catalyst** polymer supported; hydroformylation polymer  
 supported metal cluster **catalyst**  
 IT Cluster compounds, coordinative  
     (metal, polymer-supported, **catalysts**, for  
     hydroformylation of hexene)  
 IT Hydroformylation **catalysts**  
     (polymer-supported metal clusters, for hexene)  
 IT 592-41-6, 1-Hexene, reactions  
     (hydroformylation of, polymer-supported cluster complexes as  
     **catalyst** for)  
 IT 79829-47-3 90636-10-5 146912-29-0D,  
     polymer-supported 146912-30-3D, polymer-supported  
     (prepn. as **catalyst** for hydroformylation of hexene)  
 IT 111-71-7P, Heptaldehyde  
     (prepn. of, by hydroformylation of hexene in presence of  
     polymer-supported cluster complex **catalysts**)  
 IT 10210-68-1, Dicobalt octacarbonyl  
     (reaction of, with iron pentacarbonyl and polymer-copper or  
     -gold)

L111 ANSWER 9 OF 19 HCA COPYRIGHT 2008 ACS on STN  
 AN 117:130707 HCA Full-text  
 OREF 117:22683a, 22686a  
 TI Involvement of Co<sub>4</sub>(CO)<sub>8</sub>(μ<sub>2</sub>-CO)<sub>2</sub>(μ<sub>4</sub>-PPh)<sub>2</sub> catalysts in olefin  
 hydroformylation  
 AU Pittman, Charles U., Jr.; Hilal, Hikmat; Don, Ming Jaw; Richmond,  
 Michael G.  
 CS Dep. Chem., Mississippi State Univ., Mississippi State, MS, USA  
 SO Chemical Industries (Dekker) (1992), 47(Catal. Org.)

React.), 307-35

CODEN: CHEID; ISSN: 0737-8025

DT Journal

LA English

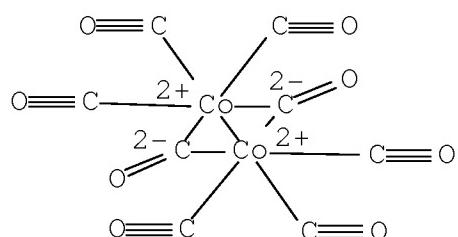
AB Homogeneous hydroformylation of terminal alkenes, e.g., 1-pentene or 1-octene, over  $\text{Co}_4(\text{CO})_8(\mu_2\text{-CO})_2(\mu_4\text{-PPh})_2$  or  $\text{Fe}_2\text{Co}_2(\text{CO})_{10}(\mu_2\text{-CO})(\mu_4\text{-PPh})_2$  was investigated. Techniques used included kinetic measurements, product selectivities, and cylindrical internal reflectance-Fourier transform IR spectroscopy. Both catalysts persist during catalysis at 130°.

IT 10210-68-1 58092-22-1 78456-88-9

(catalysts, for olefin hydroformylation)

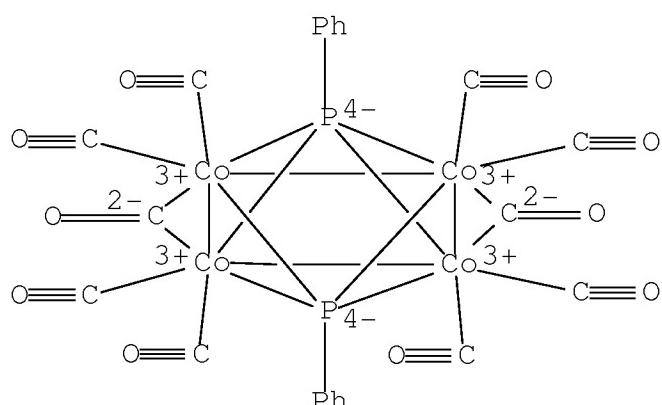
RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



RN 58092-22-1 HCA

CN Cobalt, di- $\mu$ -carbonyloctacarbonylbis[ $\mu_4$ -(phenylphosphorane tetrayl)]tetra-, (4Co-Co) (9CI) (CA INDEX NAME)



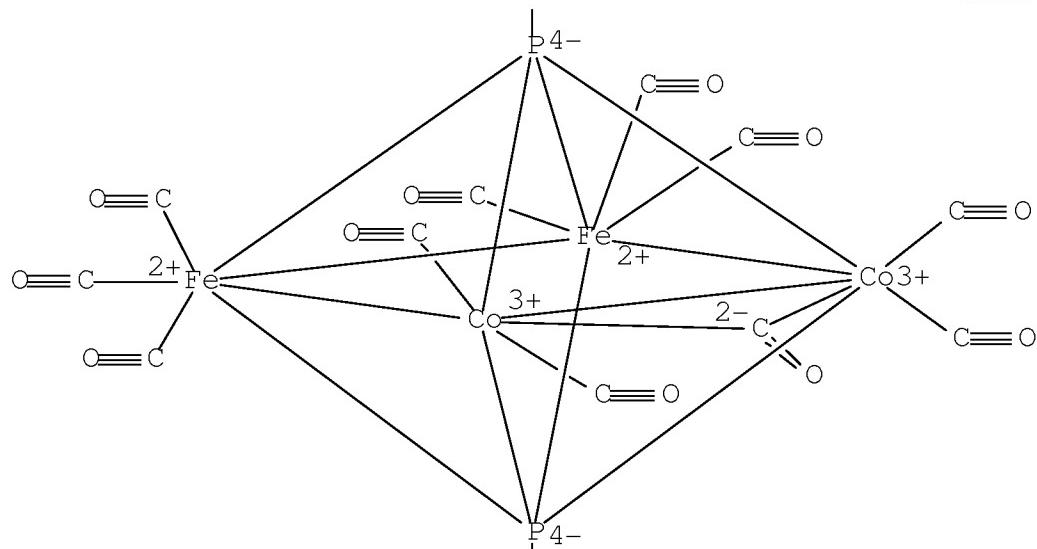
RN 78456-88-9 HCA

CN Iron, hexacarbonyl( $\mu$ -carbonyltetracarbonyldicobalt)bis[ $\mu$ <sup>4</sup>-(phenylphosphorane)tetrayl]di-, (Co-Co)(2Co-Fe)(Fe-Fe) (9CI) (CA INDEX NAME)

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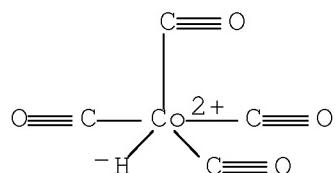


IT 12373-54-5P

(formation of, during cobalt cluster-catalyzed hydroformylation of alkenes)

RN 12373-54-5 HCA

CN Cobalt(1+), tetracarbonylhydro- (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)  
ST cluster compd olefin hydroformylation catalyst; cobalt  
cluster compd olefin hydroformylation  
IT Cluster compounds, coordinative  
(catalysts, for olefin hydroformylation)  
IT Hydroformylation catalysts  
(cobalt clusters, for terminal alkenes)  
IT Alkenes, reactions  
(hydroformylation of, over cobalt cluster catalysts)  
IT Hydroformylation  
Kinetics of hydroformylation  
(of alkenes over cobalt clusters)  
IT 603-35-0, Triphenylphosphine, uses  
(catalysts with cobalt complex, for olefin  
hydroformylation)  
IT 10210-68-1 58092-22-1 78456-88-9  
(catalysts, for olefin hydroformylation)  
IT 12373-54-5P  
(formation of, during cobalt cluster-catalyzed  
hydroformylation of alkenes)  
IT 109-67-1, 1-Pentene 111-66-0, 1-Octene  
(hydroformylation of, over cobalt cluster catalysts)  
IT 630-08-0  
(hydroformylation, of alkenes over cobalt clusters)

L111 ANSWER 10 OF 19 HCA COPYRIGHT 2008 ACS on STN  
AN 112:45341 HCA Full-text  
OREF 112:7643a, 7646a  
TI Photochemical and photocatalytic studies of fluorophosphine-bridged  
iron and cobalt dimers  
AU Richmond, Michael G.; Pittman, Charles U., Jr.  
CS Cent. Organomet. Res. Educ., Univ. North Texas, Denton, TX, 76203,  
USA  
SO Journal of Molecular Catalysis (1989), 53(1), 79-103  
CODEN: JMCADS; ISSN: 0304-5102  
DT Journal  
LA English  
AB Irradn. (254, 300, 355 nm) of [MeN(PF<sub>2</sub>)<sub>2</sub>]<sub>3</sub>Co<sub>2</sub>(CO)<sub>2</sub> (I),  
[MeN(PF<sub>2</sub>)<sub>2</sub>]<sub>3</sub>Co<sub>2</sub>(PPh<sub>3</sub>)<sub>2</sub> (II), and [MeN(PF<sub>2</sub>)<sub>2</sub>]<sub>2</sub>Fe<sub>2</sub>(CO)<sub>5</sub> (III) at room  
temp. in the presence of acetophenone and SiHET<sub>3</sub> leads to  
photoassisted hydrosilation with moderate quantum yields (0.037,  
0.004, and 0.07 at 335 nm, resp). The quantum yields (.vphi.) vary  
as a function of the irradn. wavelength ( $\Phi_{300} > \Phi_{254} > \Phi_{355}$ ) and are  
drastically reduced when the reaction is conducted in the presence of  
either CO or PPh<sub>3</sub>. The wavelength dependence and external ligand  
quenching is consistent with dissociative CO loss from an upper  
excited state. UV spectral analyses suggest that the  $\sigma \rightarrow \sigma^*$

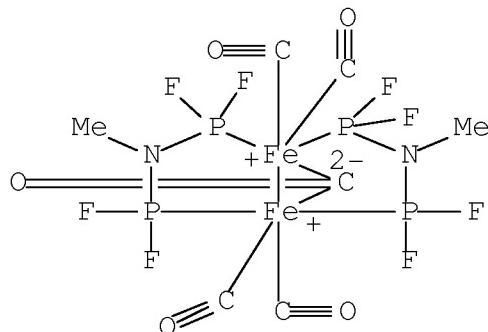
electronic transition is responsible for the obsd. quantum yield trends. Photocatalyzed 1-pentene isomerization was obsd. with I but not with II or III at 355 nm. Variable temp. studies of the photocatalyzed 1-pentene isomerization **catalyzed** by I show that a thermally active **catalytic** species is present. Photocatalyzed hydrogenation of 1-pentene was achieved with I, but only at high H pressure (.apprx.100 psi). Attempted 1-pentene hydrosilation with SiHET3, **catalyzed** by I, led only to olefin isomerization. UV irradn. of I in the presence of SiHET3 led to the oxidative addn. of silane to one Co atom, to afford  $[MeN(PF_2)_2]_3Co_2(CO)H(SiCl_3)$ . Dimer fragmentation was not obsd. with I or II due to the geometrical constraints imposed by the 3 bridging ligands.

IT 62944-85-8 64799-21-9 66632-91-5

(photochem. and photocatalytic properties of)

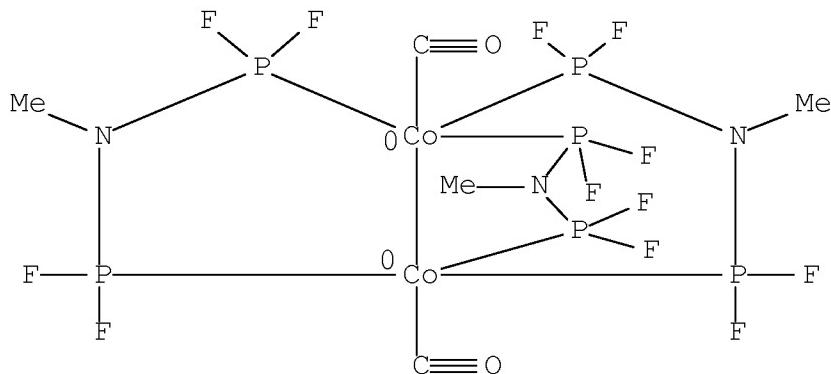
RN 62944-85-8 HCA

CN Iron,  $\mu$ -carbonyltetracarbonylbis[ $\mu$ -(methylimidodiphosphorous tetrafluoride-P:P')]di-, (Fe-Fe) (9CI) (CA INDEX NAME)

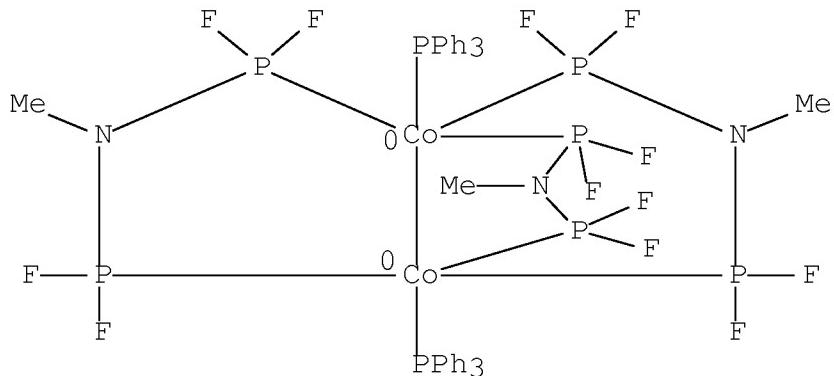


RN 64799-21-9 HCA

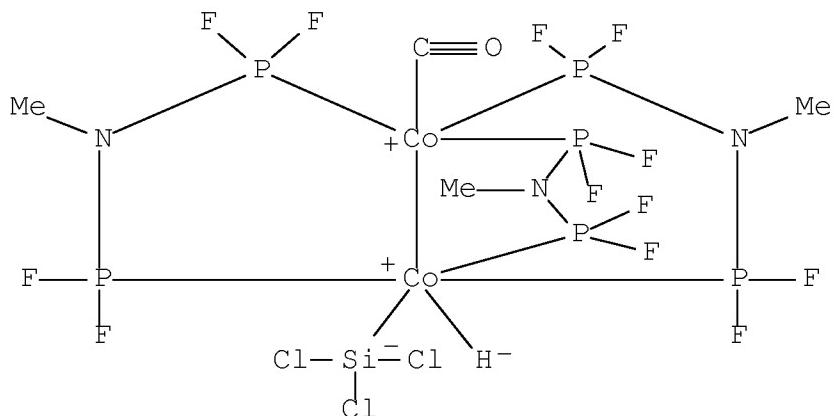
CN Cobalt, dicarbonyltris[ $\mu$ -(methylimidodiphosphorous tetrafluoride-P:P')]di-, (Co-Co) (9CI) (CA INDEX NAME)



RN 66632-91-5 HCA  
 CN Cobalt, tris[ $\mu$ -(methylimidodiphosphorous tetrafluoride-P:P')]bis(triphenylphosphine)di-, (Co-Co) (9CI) (CA INDEX NAME)



IT 124756-81-6P  
 (photoprodn. of, by UV irradn. of fluorophosphine-bridged cobalt dimer in presence of trichlorosilane)  
 RN 124756-81-6 HCA  
 CN Cobalt, carbonylhydrotris[ $\mu$ -(methylimidodiphosphorous tetrafluoride-P:P')](trichlorosilyl)di-, (Co-Co) (9CI) (CA INDEX NAME)



CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 67, 78

ST photoreaction fluorophosphine cobalt iron dimer;  
photocatalysis fluorophosphine bridged metal dimer

IT Photolysis catalysts  
(fluorophosphine-bridged iron and cobalt  
dimers as)

IT Photolysis  
(of fluorophosphine-bridged iron and cobalt  
dimers)

IT Catalysts and Catalysis  
(photochem., fluorophosphine-bridged iron and cobalt dimers as)

IT Hydrosilylation  
(photochem., of fluorophosphine-bridged iron and  
cobalt dimers)

IT Hydrogenation  
Isomerization  
(photochem., of pentene, fluorophosphine-bridged iron  
and cobalt dimers in)

IT 1333-74-0  
(hydrogenation, photochem., of pentene, fluorophosphine-bridged  
iron and cobalt dimers in)

IT 109-67-1, 1-Pentene  
(photocatalyzed isomerization and hydrogenation of,  
fluorophosphine-bridged iron and cobalt  
dimers in)

IT 62944-85-8 64799-21-9 66632-91-5  
(photochem. and photocatalytic properties of)

IT 617-86-7, Triethylsilane  
(photochem. and photocatalytic properties of fluorophosphine-  
bridged iron and cobalt dimers in presence  
of)

IT 98-86-2, Acetophenone, properties  
(photochem. and photocatalytic properties of fluorophosphine-  
bridged iron and cobalt dimers in presence  
of)

IT 124756-81-6P  
(photoprodn. of, by UV irradn. of fluorophosphine-bridged cobalt  
dimer in presence of trichlorosilane)

L111 ANSWER 11 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 112:6992 HCA Full-text

OREF 112:1372a

TI 1-Pentene hydroformylation using the mixed-metal cluster  
 $\text{Fe}_2\text{Co}_2(\text{CO})_{11}(\mu_4\text{-PPh})_2$ : cylindrical internal reflectance evidence  
for cluster catalysis

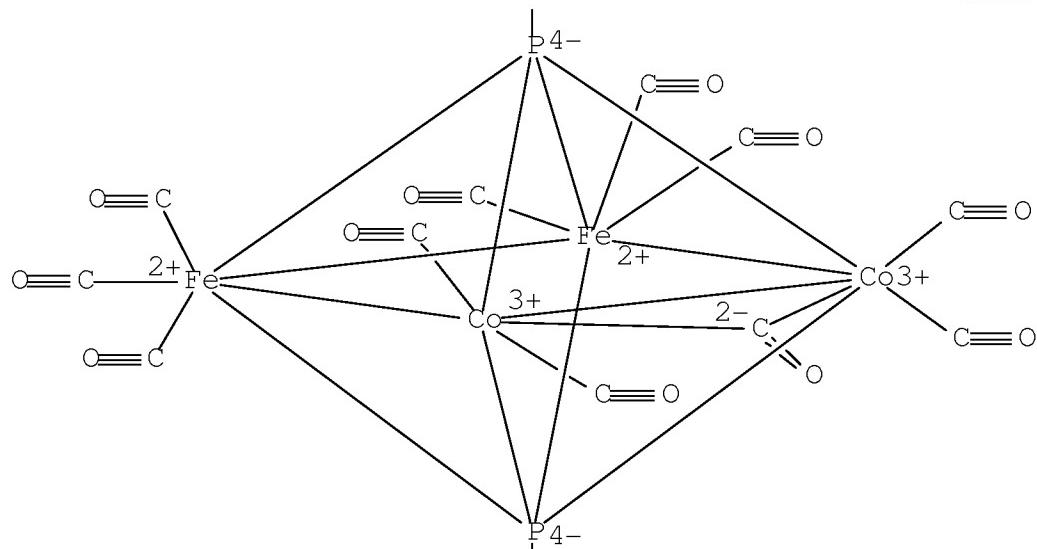
AU Richmond, Michael G.

CS Cent. Organometallic Res. Educ., Univ. North Texas, Denton, TX,

76201, USA  
SO Journal of Molecular Catalysis (1989), 54(2), 199-204  
CODEN: JMCADS; ISSN: 0304-5102  
DT Journal  
LA English  
OS CASREACT 112:6992  
AB The title **catalyzes** the hydroformylation of 1-pentene to hexanal and 2-methylpentanal in moderate to high yield under mild batch conditions. Cluster **catalysis** is suggested based on FTIR and HPLC analyses of the final reaction solns., and in situ cylindrical internal reflectance measurements of the working **catalyst** soln. A **closo** → **nido** polyhedral transformation in the cluster is proposed as the entry point into the **catalytic** cycle.  
IT 78456-88-9  
(catalysts, for hydroformylation of pentene)  
RN 78456-88-9 HCA  
CN Iron, hexacarbonyl( $\mu$ -carbonyltetracobalt)bis[ $\mu$ 4-(phenylphosphorane)tetrayl]di-, (Co-Co)(2Co-Fe)(Fe-Fe) (9CI) (CA INDEX NAME)

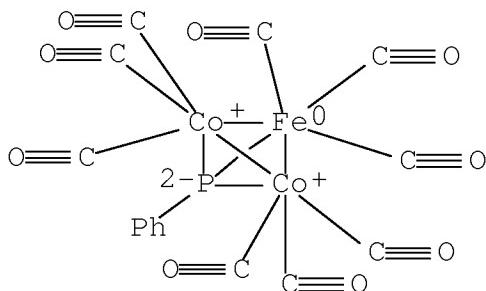
PAGE 1-A



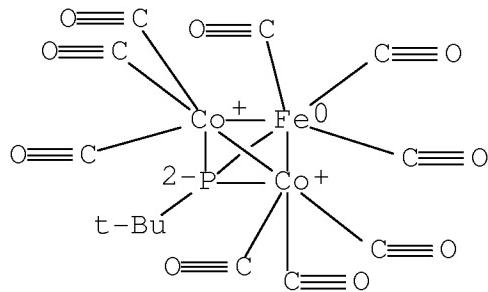


CC 22-13 (Physical Organic Chemistry)  
 ST pentene hydroformylation iron cobalt  
 cluster; FTIR pentene hydroformylation metal cluster  
 IT Hydroformylation catalysts  
     (cobalt-iron cluster, for pentene, FTIR study  
     of)  
 IT 78456-88-9  
     (catalysts, for hydroformylation of pentene)  
 IT 109-67-1, 1-Pentene  
     (hydroformylation of, iron cobalt  
     cluster catalyzed)

TI Metal exchange in clusters under redox conditions  
 AU Honrath, Ute; Vahrenkamp, Heinrich  
 CS Inst. Anorg. Anal. Chem., Univ. Freiburg, Freiburg, D-7800, Fed.  
     Rep. Ger.  
 SO Zeitschrift fuer Naturforschung, Teil B: Anorganische Chemie,  
     Organische Chemie (1984), 39B(5), 559-65  
     CODEN: ZNBAD2; ISSN: 0340-5087  
 DT Journal  
 LA German  
 AB The paramagnetic clusters ECo<sub>3</sub>(CO)<sub>9</sub> (E = S, Se, PCMe<sub>3</sub>, PPh, PN*Et*<sub>2</sub>, POBu, PSEt), some of which were fully characterized for the first time, were treated with Na<sub>2</sub>Fe(CO)<sub>4</sub>. The resulting metal exchange, which is a redox reaction, produced the clusters EFeCo<sub>2</sub>(CO)<sub>9</sub>. Further treatment with Na<sub>2</sub>Fe(CO)<sub>4</sub> and acidification produced the clusters EFe<sub>2</sub>Co(CO)<sub>9</sub>H, the anions of which could be isolated as PPN salts. Electron transfer **catalysis** with benzophenone ketyl allowed the conversion of EFeCo<sub>2</sub>(CO)<sub>9</sub> (E = S, Se, PN*Et*<sub>2</sub>) with NaMCp(CO)<sub>3</sub> (M = Mo, W) into the chiral clusters EFeCoM(CO)<sub>8</sub>Cp.  
 IT 69569-55-7P 87160-20-1P  
     (prepn. and exchange reaction of, with iron carbonyl dianion)  
 RN 69569-55-7 HCA  
 CN Iron, tricarbonyl(hexacarbonyldicobalt) [ $\mu_3$ -(phenylphosphinidene)]-, (Co-Co)(2Co-Fe) (9CI) (CA INDEX NAME)



RN 87160-20-1 HCA  
 CN Iron, tricarbonyl[ $\mu_3$ -[(1,1-dimethylethyl)phosphinidene]] (hexacarbonyldicobalt)-, (Co-Co)(2Co-Fe) (9CI) (CA INDEX NAME)

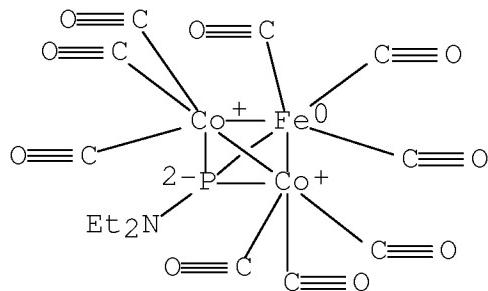


IT 88131-02-6P

(prepn. and metal exchange reactions of)

RN 88131-02-6 HCA

CN Iron, tricarbonyl[μ3-[N,N-diethylphosphinous amidato(2-)P:P:P]](hexacarbonyldicobalt)-, (Co-Co)(2Co-Fe) (9CI) (CA INDEX NAME)

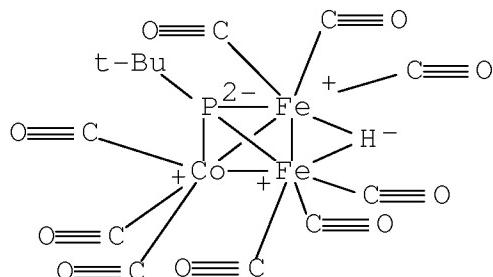


IT 87160-21-2P 91581-58-7P

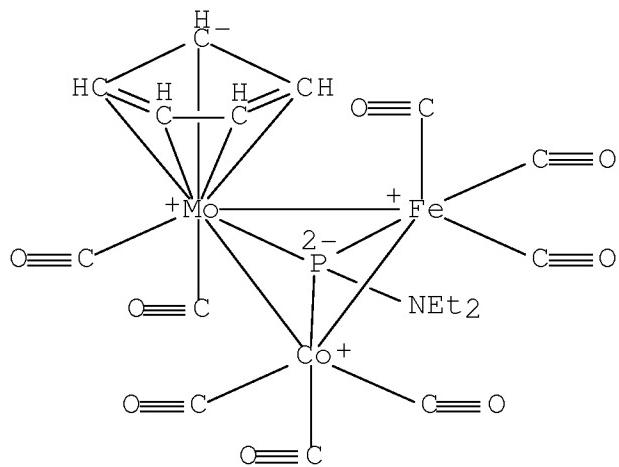
(prepn. and redn. of)

RN 87160-21-2 HCA

CN Iron, hexacarbonyl[μ3-[(1,1-dimethylethyl)phosphinidene]]-μ-hydro(tricarbonylcobalt)di-, (2Co-Fe)(Fe-Fe) (9CI) (CA INDEX NAME)



- RN 91581-58-7 HCA
- CN Iron, hexacarbonyl- $\mu$ -hydro [ $\mu$ 3-(phenylphosphinidene)] (tricarbonylcobalt)di-, (2Co-Fe) (Fe-Fe) (9CI) (CA INDEX NAME)
- 
- IT 91581-59-8P 91609-90-4P  
(prep. of)
- RN 91581-59-8 HCA
- CN Iron, hexacarbonyl [ $\mu$ 3-[N,N-diethylphosphinous amidato(2-)-P:P:P]] (tricarbonylcobalt)di-, (2Co-Fe) (Fe-Fe) (9CI) (CA INDEX NAME)
- 
- RN 91609-90-4 HCA
- CN Molybdenum, dicarbonyl( $\eta$ 5-2,4-cyclopentadien-1-yl) [ $\mu$ 3-[N,N-diethylphosphinous amidato(2-)-P:P:P]] (tricarbonylcobalt) (tricarbonyliron)-, (Co-Fe) (Co-Mo) (Fe-Mo) (9CI) (CA INDEX NAME)

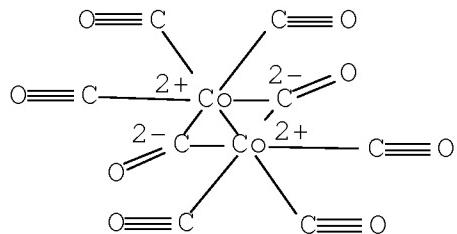


IT 10210-68-1

(reaction of, with dichlorophosphines or di-Ph diselenide)

RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



CC 29-13 (Organometallic and Organometalloidal Compounds)

IT Redox reaction

(of cobalt clusters, with iron tetracarbonyl dianion)

IT Exchange reaction

(of metals, in cobalt-iron clusters)

IT Cluster compounds

(cobalt-iron, metal exchange in)

IT 69569-55-7P 87160-20-1P

(prepn. and exchange reaction of, with iron carbonyl dianion)

IT 22364-22-3P 35163-36-1P 88131-02-6P

(prepn. and metal exchange reactions of)

IT 87160-21-2P 91581-57-6P 91581-58-7P

(prepn. and redn. of)

IT 68185-55-7P 68185-56-8P 78547-58-7P 91373-53-4P 91408-26-3P  
91408-27-4P 91408-28-5P 91581-59-8P 91581-61-2P  
91581-62-3P 91581-63-4P 91594-40-0P 91609-90-4P  
91609-91-5P

(prepn. of)

IT 10210-68-1

(reaction of, with dichlorophosphines or di-Ph diselenide)

L111 ANSWER 13 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 97:91415 HCA Full-text

OREF 97:15239a,15242a

TI Mechanistic approaches and high pressure homogeneous hydrogenation of carbon monoxide

AU Keim, Wilhelm; Berger, Michael; Eisenbeis, Ansgar; Kadelka, Juergan; Schlupp, Johannes

CS Inst. Tech. Chem. Petrolchem., Tech. Hochsch. Aachen, Aachen, D-5100, Fed. Rep. Ger.

SO Journal of Molecular Catalysis (1981), 13(1), 95-106  
CODEN: JMCADS; ISSN: 0304-5102

DT Journal

LA English

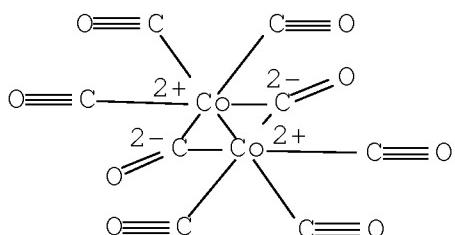
AB Complexes with sp<sup>3</sup>- and sp<sup>2</sup>-hybridized C-metal bonds were reacted with CO and H-CO mixts. Only insertion was obsd. ina ll cases. Clusters and complexes of Group VIII elements were used as catalysts for the homogeneous hydrogenation of CO at high pressures. A variety of oxygenated compds. such as Me formate, Me acetate, Et formate, MeOH, EtOH, PrOH, propylene glycols, ethylene glycol and glycerin was formed. The mechanism of the Co- catalyzed reactions was discussed and noncluster bimetallic intermediates were proposed for the key steps.

IT 10210-68-1

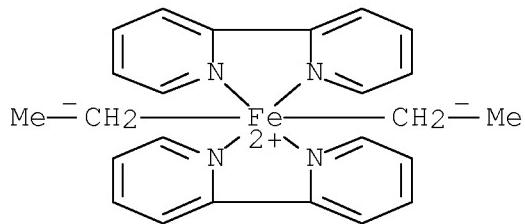
(catalysts, for high pressure homogeneous hydrogenation of carbon monoxide)

RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



IT 15627~21~1  
(reaction of, with carbon monoxide or carbon monoxide-hydrogen mixts.)  
RN 15627-21-1 HCA  
CN Iron, bis(2,2'-bipyridine-κN1,κN1')diethyl- (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)  
ST carbon monoxide homogeneous hydrogenation; cluster **catalysis**  
carbon monoxide hydrogenation; insertion carbon monoxide metal  
IT Hydrogenation **catalysts**  
(group VIII carbonyls, for carbon monoxide, mechanism with)  
IT 10210~68~1 14874-82-9 15243-33-1  
(**catalysts**, for high pressure homogeneous hydrogenation  
of carbon monoxide)  
IT 630-08-0, reactions  
(hydrogenation of, **catalytic**, mech. of, insertion  
reactions with carbon-metal bonds in relation to)  
IT 15218-76-5 15380-73-1 15627~21~1 15975-90-3  
15975-91-4 15975-92-5 23272-69-7 27436-93-7 37823-96-4  
(reaction of, with carbon monoxide or carbon monoxide-hydrogen  
mixts.)

L111 ANSWER 14 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 93:238305 HCA Full-text

OREF 93:38159a,38162a

TI The interaction of chelated lithium complexes with transition metal compounds as catalysts in organic synthesis  
AU Moser, William R.; Langer, Arthur W., Jr.  
CS Badger Co., Cambridge, MA, USA  
SO Catalysis in Organic Syntheses (1980), Volume Date 1978,  
7th, 219-32  
CODEN: CAOSDF; ISSN: 0197-534X  
DT Journal  
LA English

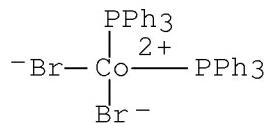
AB Several examples where the phys. and chem. properties of Li salt N-chelates offer unique advantage for the synthesis of catalysts and pure coordination complexes are provided. The catalytic activity of borohydride complexes, e.g.,  $\text{FeCl}(\text{BH}_4)[\text{MeN}(\text{CH}_2\text{CH}_2\text{NMe}_2)_2]$ , was exmd. in butadiene (I) dimerization and cyclization, propene dimerization, ketone redns. and olefin dismutation and hydroformylation. The complexes were active only in I reactions.

IT 14126-32-0

(addn. of lithium complex to)

RN 14126-32-0 HCA

CN Cobalt, dibromobis(triphenylphosphine)-, (T-4)- (CA INDEX NAME)

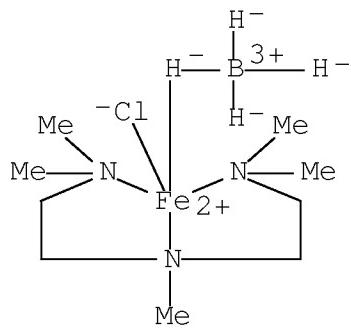


IT 75747-73-8 75747-74-9 75747-75-0

(catalysts, for reactions of butadiene)

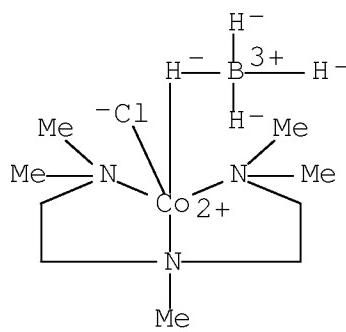
RN 75747-73-8 HCA

CN Iron, chloro[N-[2-(dimethylamino)ethyl]-N,N',N'-trimethyl-1,2-ethanediamine-N,N',N''] [tetrahydroborato(1--H)]-, (TB-5-13)- (9CI)  
(CA INDEX NAME)

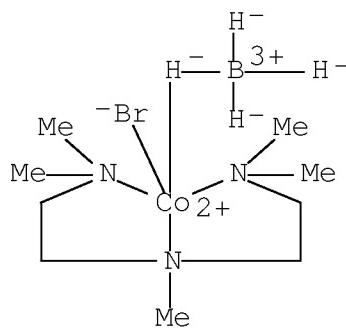


RN 75747-74-9 HCA

CN Cobalt, chloro[N-[2-(dimethylamino)ethyl]-N,N',N'-trimethyl-1,2-ethanediamine-N,N',N''] [tetrahydroborato(1--H)]-, (TB-5-13)- (9CI)  
(CA INDEX NAME)



RN 75747-75-0 HCA  
 CN Cobalt, bromo[N-[2-(dimethylamino)ethyl]-N,N',N'-trimethyl-1,2-ethanediamine-N,N',N''] [tetrahydroborato(1--H)]-, (TB-5-13)- (9CI)  
 (CA INDEX NAME)



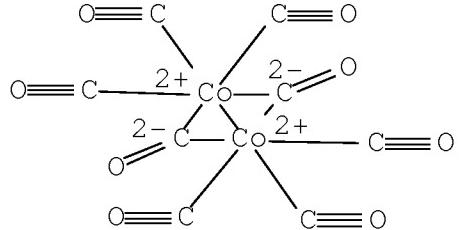
CC 22-5 (Physical Organic Chemistry)  
 Section cross-reference(s): 67  
 IT 14126-32-0 14126-37-5  
 (addn. of lithium complex to)  
 IT 75747-71-6 75747-72-7 75747-73-8 75747-74-9  
 75747-75-0  
 (catalysts, for reactions of butadiene)

L111 ANSWER 15 OF 19 HCA COPYRIGHT 2008 ACS on STN  
 AN 93:188998 HCA Full-text  
 OREF 93:30115a,30118a  
 TI Catalyst for the refining of liquid and gaseous industrial mixtures containing mercaptans  
 IN Nametkin, N. S.; Sobolev, V. M.; Tyurin, V. D.; Nechaev, A. I.; Larionov, L. I.; Nechaeva, L. A.; Zhadanovskii, N. B.; Kukina, M.

A.; Dekhterman, A. S.; et al.  
 PA Topchiev, A. V., Institute of Petrochemical Synthesis, USSR; Gubkin,  
     I. M., Institute of the Petrochemical and Gas Industry, Moscow;  
     Gorki State Institute for Designing Plants of the Petroleum Refining  
     and Petrochemical Industry; Novogorsk Petroleum Refining Plant  
 SO Ger. Offen., 55 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 FAN.CNT 1

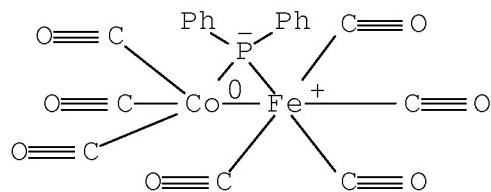
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2829547	A1	19800124	DE 1978-2829547	197807 05
				<--	
NL	7807124	A	19800103	NL 1978-7124	197806 30
				<--	

PRAI DE 1978-2829547        A        19780705    <--  
 AB Carbonyl compds. of monomeric or polymeric complexes of Fe and/or  
     Group VI-VIII metals are **catalysts** for oxidizing mercaptans in  
     mixts., i.e. petroleum products, to disulfides. Thus, heating 26.4 g  
     Mo(CO)<sub>6</sub> and 7.6 g CH<sub>2</sub>:CHCH<sub>2</sub>Cl [107-05-1] in 250 mL MeCN 5 h at 50°  
     gives 12.1 g π-C<sub>3</sub>H<sub>5</sub>(MeCN)2Mo(CO)<sub>2</sub>Cl (I) [33221-75-9]. Countercurrent  
     scrubbing with a kerosine soln. of I of a mixt. of H<sub>4</sub>, CH<sub>4</sub> 76.8,  
     C<sub>2</sub>H<sub>6</sub> 4.4, C<sub>3</sub>H<sub>8</sub> 1.7, C<sub>4</sub>H<sub>10</sub> 0.8, and N 12.3% contg. 090043% mercaptan S  
     lowers the mercaptan S content to 0.0003%.  
 IT 10210-68-1D, reaction products with aminotriazole deriv.  
     polymers 22852-98-8 37081-11-1  
     (**catalysts**, for oxidn. of mercaptans in org. compds.)  
 RN 10210-68-1 HCA  
 CN Cobalt, di-μ-carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



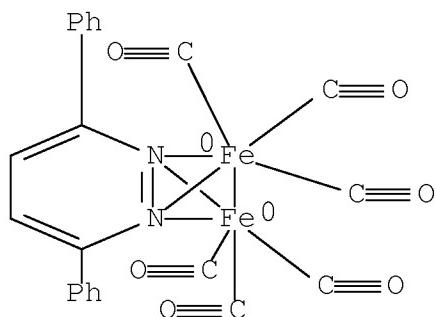
RN 22852-98-8 HCA

CN Iron, tetracarbonyl[ $\mu$ -(diphenylphosphino)](tricarbonylcobalt)-,  
(Co-Fe) (9CI) (CA INDEX NAME)



RN 37081-11-1 HCA

CN Iron, hexacarbonyl[ $\mu$ -(3,6-diphenylpyridazine-N1,N2:N1,N2)]di-,  
(Fe-Fe) (9CI) (CA INDEX NAME)



IC B01J031-26; C10G023-02

CC 51-5 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 35, 49, 67

ST catalyst oxidn mercaptan disulfide; molybdenum complex

catalyst oxidn; allylmolybdenum complex catalyst

oxidn; acetonitrile complex molybdenum catalyst; carbonyl  
molybdenum catalyst oxidn; natural gas mercaptan oxidn

IT Carbonyls

(catalysts, for oxidn. of mercaptans in org. compds.)

IT Alcohols, uses and miscellaneous

Hydrocarbons, uses and miscellaneous

Natural gas

(mercaptan removal from, oxidn. catalysts for)

IT Oxidation catalysts

(metal chelates, for thiols in org. compds.)

IT Thiols, reactions

(oxidn. of, in org. compds., catalysts for)

IT 62-53-3D, manganese complexes 107-05-1D, palladium complexes  
121-44-8D, iron complexes 584-13-4D, deriv., polymers, reaction  
products with cobalt carbonyl 6783-75-1D, cobalt complexes  
9002-98-6D, reaction products with iron carbonyls 9003-17-2D,  
complexes with iron carbonyl 9003-39-8D, reaction products with  
iron carbonyls 10210-68-1D, reaction products with  
aminotriazole deriv. polymers 12152-72-6 12253-47-3D, reaction  
products with iron carbonyl 13007-92-6D, reaction products with  
polyureas 13463-40-6D, reaction products with butadiene-vinyl  
piciline polymers 13939-06-5D, reaction products with  
poly(vinylpyridine) 14971-26-7D, reaction products with thiazole  
deriv. polymers and sodium iron carbonyl 15228-21-4 15668-57-2  
17685-52-8D, reaction product with polymers 19456-57-6  
22309-04-2 22852-98-8 25085-55-6D, complexes with iron  
carbonyl 25232-41-1D, reaction product with molybdenum carbonyl  
27044-31-1D, reaction products with iron carbonyls 29384-95-0D,  
iron complexes 31082-69-6 32716-35-1 33221-75-9 33678-01-2  
37081-11-1 52390-31-5 55958-48-0D, reduced 73906-13-5  
73906-15-7 73906-16-8 73906-18-0 73906-20-4 73914-10-0  
73914-37-1 73929-52-9 80238-56-8

(catalysts, for oxidn. of mercaptans in org. compds.)

IT 1101-41-3  
(reaction of, with iron carbonyl and cobalt  
carbonyl)

L111 ANSWER 16 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 93:25827 HCA Full-text

OREF 93:4325a, 4328a

TI High-pressure homogeneous hydrogenation of carbon monoxide in polar  
and nonpolar solvents

AU Keim, W.; Berger, M.; Schlupp, J.

CS Inst. Tech. Chem. Petrolchem., Rheinisch-Westfael. Tech. Hochsch.,  
Aachen, D-5100, Fed. Rep. Ger.

SO Journal of Catalysis (1980), 61(2), 359-65

CODEN: JCTLA5; ISSN: 0021-9517

DT Journal

LA English

AB The homogeneous hydrogenation of CO was carried out at high pressures  
over clusters and complexes of Group VIII elements of the periodic  
table as catalysts. A variety of oxygenated compds. such as HCO<sub>2</sub>Me,  
HCO<sub>2</sub>Et, AcOMe, MeOH, EtOH, PrOH, propylene glycols, ethylene glycol,  
and glycerin were formed in varying degrees. The polarity of the  
solvent plays an important role. In the nonpolar system  
toluene/Co<sub>2</sub>(CO)<sub>8</sub>, good conversions and selectivities to HCO<sub>2</sub>Me, MeOH  
and ethylene glycol were obsd. The mechanism of the Co-catalyzed

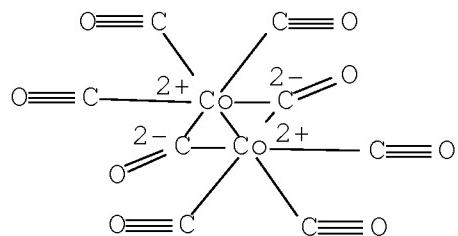
reactions is discussed and noncluster intermediates are proposed for the key steps.

IT 10210-68-1 17685-52-8

(catalysts, for homogenous high-pressure hydrogenation of carbon monoxide)

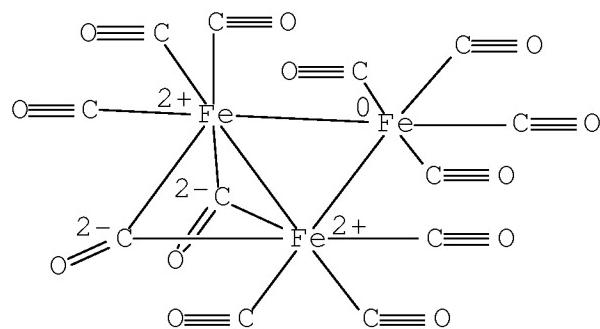
RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



RN 17685-52-8 HCA

CN Iron, di- $\mu$ -carbonyldecacarbonyltri-, triangulo (CA INDEX NAME)



IT 504-63-2P

(prepn. of, by hydrogenation of carbon monoxide)

RN 504-63-2 HCA

CN 1,3-Propanediol (CA INDEX NAME)



CC 23-7 (Aliphatic Compounds)

IT 3264-82-2 10210-68-1 14024-61-4 14874-82-9  
15243-33-1 15696-40-9 16941-12-1 17685-52-8  
18827-81-1  
(catalysts, for homogenous high-pressure hydrogenation of carbon monoxide)

IT 56-81-5P, preparation 57-55-6P, preparation 64-17-5P,  
preparation 67-56-1P, preparation 71-23-8P, preparation  
79-20-9P 107-21-1P, preparation 107-31-3P 109-94-4P  
**504-63-2P** 628-35-3P  
(prep. of, by hydrogenation of carbon monoxide)

L111 ANSWER 17 OF 19 HCA COPYRIGHT 2008 ACS on STN  
AN 89:155497 HCA Full-text  
OREF 89:23975a,23978a

TI Photo-induced declusterification of HCCo<sub>3</sub>(CO)<sub>9</sub>, CH<sub>3</sub>CCo<sub>3</sub>(CO)<sub>9</sub>, and HFeCo<sub>3</sub>(CO)<sub>12</sub>

AU Geoffroy, Gregory L.; Epstein, Ronald A.

CS Dep. Chem., Pennsylvania State Univ., University Park, PA, USA

SO Advances in Chemistry Series (1978), 168(Inorg. Organomet. Photochem.), 132-46

CODEN: ADCSAJ; ISSN: 0065-2393

DT Journal

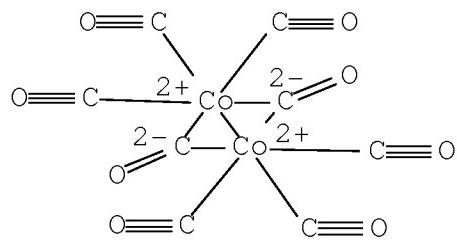
LA English

AB Irradn. of solns. of HCCo<sub>3</sub>(CO)<sub>9</sub> under a H<sub>2</sub> atm. with visible or UV light leads to quant. formation of Co<sub>4</sub>(CO)<sub>12</sub> and prodn. of CH<sub>4</sub>. Under a 3:1 H<sub>2</sub>:CO atm., irradn. produces Co<sub>2</sub>(CO)<sub>8</sub> with a 366-nm quantum yield of 0.03. Photolysis in the presence of D<sub>2</sub> showed that the CH<sub>4</sub> derives from the apical CH group and not from CO. Irradn. of HCCo<sub>3</sub>(CO)<sub>9</sub> in the presence of H<sub>2</sub> and 1-hexene leads to **catalytic** isomerization to cis- and trans-2-hexene. The photochem. properties of MeCCo<sub>3</sub>(CO)<sub>9</sub> parallel those of HCCo<sub>3</sub>(CO)<sub>9</sub> except that no reaction occurs under a H<sub>2</sub>-CO atm. Irradn. of HFeCo<sub>3</sub>(CO)<sub>12</sub> and HFeCo<sub>3</sub>(CO)<sub>10</sub>(PPh<sub>3</sub>)<sub>2</sub> in degassed solns. also leads to declusterification with subsequent formation of Co<sub>4</sub>(CO)<sub>12</sub> and Co<sub>2</sub>(CO)<sub>6</sub>(PPh<sub>3</sub>)<sub>2</sub>, resp. The Fe-contg. products were not identified.

IT 10210-68-1P  
(formation of, in photolysis of cobalt carbonyl cluster complex in hydrogen-carbon monoxide atm.)

RN 10210-68-1 HCA

CN Cobalt, di- $\mu$ -carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)

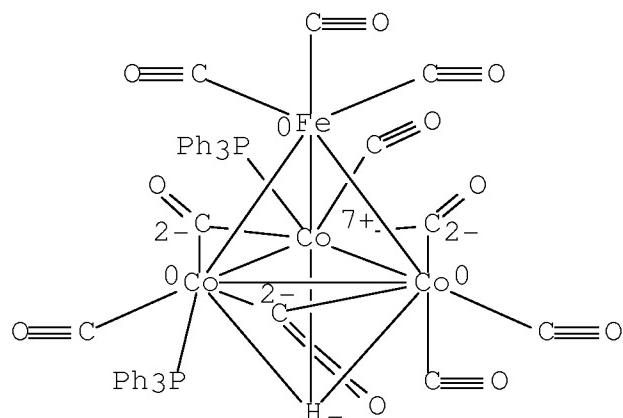


IT 56009-83-7

(photolysis of, degassed solns., declusterification in)

RN 56009-83-7 HCA

CN Iron, tricarbonyl[tri- $\mu$ -carbonyltetracarbonyl- $\mu$ 3-hydrobis(triphenylphosphine)tricobalt]-, (3Co-Co)(3Co-Fe), stereoisomer (9CI) (CA INDEX NAME)



CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic Processes)

ST photolysis organometallic cluster complex; cobalt carbonyl cluster complex photolysis; iron cobalt cluster complex photolysis

IT Photolysis

(of cobalt and cobalt iron carbonyl cluster complex, declusterification in)

IT 10210-68-1P

(formation of, in photolysis of cobalt carbonyl cluster complex in hydrogen-carbon monoxide atm.)

IT 24212-54-2P

(formation of, in photolysis of cobalt iron carbonyl triphenylphosphine cluster complex)

IT 1333-74-0, uses and miscellaneous  
(photolysis of cobalt and cobalt iron  
carbonyl cluster complexes in presence of)  
IT 630-08-0, uses and miscellaneous  
(photolysis of cobalt and cobalt iron  
carbonyl cluster complexes in presence of hydrogen and)  
IT 21750-96-9 56009-83-7  
(photolysis of, degassed solns., declusterification in)

L111 ANSWER 18 OF 19 HCA COPYRIGHT 2008 ACS on STN

AN 75:40967 HCA Full-text

OREF 75:6451a,6454a

TI First-row transition metal complexes for use as hydrogenation catalysts

IN Lagrange, Yvon; Martino, Germain

PA Institut Francais du Petrole, des Carburants et Lubrifiants

SO Fr. Demande, 7 pp.

CODEN: FRXXBL

DT Patent

LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2034147		19710108	FR 1969-3224	196902 11

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AB A method is described for the prepn. of organometallic compds. which can be used as hydrogenation, hydroformylation, and codimerization catalysts. They have as a general formula  $H_xX_yM_L^n$ , where x and y are nos. in the range 0-1, n a pos. integer that takes the values 1 or 2, X a halogen atom or a  $ClO_4^-$  or  $NO_3^-$  ion and M a metal of the first transition metals row (namely Fe, Co, or Ni). L is a ligand with 2 bound atoms such as 1,2- bis(diphenylphosphino)ethane or -propane, or any other similar compd. contg. 2 atoms of Group VA such as P and As. These 2 atoms can be coordinated on the same metal ion. The process is characterized by the fact that a compd. of the former metals is reduced by  $NH_2-NH_2$  (or a deriv.) in the presence of one of the above coordinates. The hydrazine derivative is characterized by the fact that 1 hydrogen atom is replaced by an hydrocarbon chain contg. 1 to 20 atoms. Typically, 3 g  $CoCl_2(DPE)_2$ , where DPE is 1,2- bis(diphenylphosphino)ethane, and 1 g hydrazine hydrate are dissolved in 50 cm<sup>3</sup> 2-propanol and stirred for 1 hr at 40° under  $H_2$  atm. A ppt. is obtained and isolated which corresponds to  $HCo(DPE)_2$ . The yield is of the order of 90%.

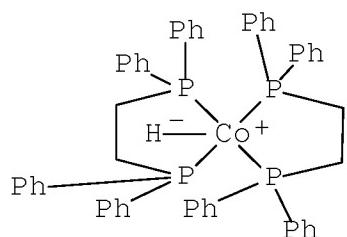
IT 18433-72-2P 32490-70-3P 33395-95-8P

33395~96~9P

(catalysts, manuf. of)

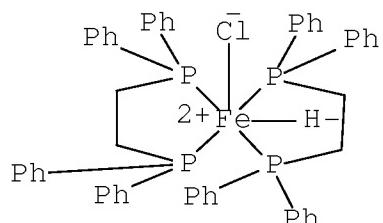
RN 18433-72-2 HCA

CN Cobalt, bis[1, 2-ethanediylbis[diphenylphosphine]-P, P']hydro- (9CI)  
(CA INDEX NAME)



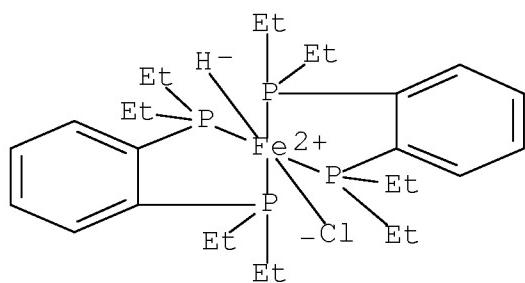
RN 32490-70-3 HCA

CN Iron, chlorobis[1,1'-(1,2-ethanediyl)bis[1,1-diphenylphosphine-  
κP]]hydro- (CA INDEX NAME)

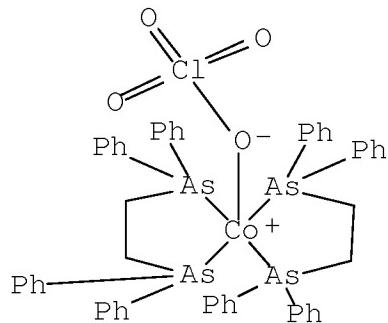


RN 33395-95-8 HCA

CN Iron, chlorohydrobis[o-phenylenebis[diethylphosphine]]- (8CI) (CA  
INDEX NAME)



RN 33395-96-9 HCA  
CN Cobalt, bis[ethylenebis[diphenylarsine]]perchlorato- (8CI) (CA  
INDEX NAME)



IC B01J  
CC 67 (Catalysis and Reaction Kinetics)  
IT 15628-25-8P 18433-72-2P 32490-70-3P  
33364-30-6P 33364-31-7P 33395-95-8P 33395-96-9P  
1663-45-2D, Phosphine, ethylenebis[diphenyl-, transition metal  
complexes 4431-24-7D, Arsine, ethylenebis[diphenyl-, cobalt  
complexes 19845-68-2D, Phosphine, o-phenylenebis[diethyl-,  
transition metal complexes  
(catalysts, manuf. of)

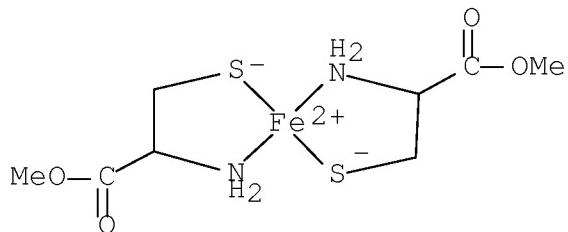
L111 ANSWER 19 OF 19 HCA COPYRIGHT 2008 ACS on STN  
AN 63:3424 HCA Full-text  
OREF 63:630d-e  
TI Reaction of a cobalt-containing Ziegler-type system with carbon  
monoxide. Direct synthesis of dicobalt octacarbonyl and an  
acylcobalt tetracarbonyl at room temperature  
AU Szabo, Pal; Marko, Laszlo  
CS Hungarian Oil Gas Res. Inst., Veszprem  
SO Journal of Organometallic Chemistry (1965), 3(5), 364-6  
CODEN: JORCAI; ISSN: 0022-328X  
DT Journal  
LA English  
AB Propionylcobalt tetracarbonyl and dicobalt octacarbonyl are formed at  
room temp. from triethylaluminum and cobalt stearate-contg. hexane  
solns. by reacting with carbon monoxide. The formation of the  
acylcobalt tetracarbonyl complex proves the presence of ethylcobalt  
groups in this Ziegler-type system and is the first direct synthesis  
of an acylmetal carbonyl deriv. Nickel- and iron-contg. analogous  
solns. give nickel tetracarbonyl and iron pentacarbonyl, resp.

IT 12241-31-5

(Derived from data in the 7th Collective Formula Index  
(1962-1966))

RN 12241-31-5 HCA

CN Iron, bis(methyl L-cysteinato-N,S)- (9CI) (CA INDEX NAME)

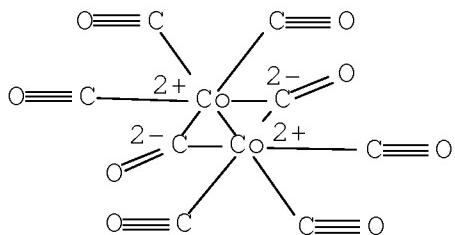


IT 10210-68-1P, Cobalt carbonyl, Co<sub>2</sub>(CO)<sub>8</sub>

(prepn. of, at room temp.)

RN 10210-68-1 HCA

CN Cobalt, di-μ-carbonylhexacarbonyldi-, (Co-Co) (CA INDEX NAME)



CC 39 (Organometallic and Organometalloidal Compounds)

IT Catalysts and Catalysis

(in cobalt carbonyl prepn. from CO, Co-contg. Ziegler)

IT 12241-31-5

(Derived from data in the 7th Collective Formula Index  
(1962-1966))

IT 10210-68-1P, Cobalt carbonyl, Co<sub>2</sub>(CO)<sub>8</sub>

(prepn. of, at room temp.)

IT 630-08-0, Carbon monoxide

(reactions of, with Co-contg. Ziegler catalysts, Co carbonyls by)